



Confidentiality Requested:

Yes  No

**WELL COMPLETION FORM**  
**WELL HISTORY - DESCRIPTION OF WELL & LEASE**

OPERATOR: License # \_\_\_\_\_

Name: \_\_\_\_\_

Address 1: \_\_\_\_\_

Address 2: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ + \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone: ( \_\_\_\_\_ ) \_\_\_\_\_

CONTRACTOR: License # \_\_\_\_\_

Name: \_\_\_\_\_

Wellsite Geologist: \_\_\_\_\_

Purchaser: \_\_\_\_\_

Designate Type of Completion:

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

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

Operator: \_\_\_\_\_

Well Name: \_\_\_\_\_

Original Comp. Date: \_\_\_\_\_ Original Total Depth: \_\_\_\_\_

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

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

Spot Description: \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

\_\_\_\_\_ Feet from  North /  South Line of Section

\_\_\_\_\_ Feet from  East /  West Line of Section

Footages Calculated from Nearest Outside Section Corner:

- NE       NW       SE       SW

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

Datum:  NAD27       NAD83       WGS84

County: \_\_\_\_\_

Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Field Name: \_\_\_\_\_

Producing Formation: \_\_\_\_\_

Elevation: Ground: \_\_\_\_\_ Kelly Bushing: \_\_\_\_\_

Total Vertical Depth: \_\_\_\_\_ Plug Back Total Depth: \_\_\_\_\_

Amount of Surface Pipe Set and Cemented at: \_\_\_\_\_ Feet

Multiple Stage Cementing Collar Used?  Yes  No

If yes, show depth set: \_\_\_\_\_ Feet

If Alternate II completion, cement circulated from: \_\_\_\_\_

feet depth to: \_\_\_\_\_ w/ \_\_\_\_\_ sx cmt.

**Drilling Fluid Management Plan**

*(Data must be collected from the Reserve Pit)*

Chloride content: \_\_\_\_\_ ppm Fluid volume: \_\_\_\_\_ bbls

Dewatering method used: \_\_\_\_\_

Location of fluid disposal if hauled offsite: \_\_\_\_\_

Operator Name: \_\_\_\_\_

Lease Name: \_\_\_\_\_ License #: \_\_\_\_\_

Quarter \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

County: \_\_\_\_\_ Permit #: \_\_\_\_\_

**AFFIDAVIT**

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

Submitted Electronically

**KCC Office Use ONLY**

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

Operator Name: \_\_\_\_\_ Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West County: \_\_\_\_\_

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

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

Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i>  Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No  Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No  List All E. Logs Run: _____	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample  Name Top Datum
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CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

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

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

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

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

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

TUBING RECORD:      Size: \_\_\_\_\_ Set At: \_\_\_\_\_ Packer At: \_\_\_\_\_ Liner Run:  Yes  No

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

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

<b>DISPOSITION OF GAS:</b> <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	<b>METHOD OF COMPLETION:</b> <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____ <input type="checkbox"/> Other <i>(Specify)</i> _____	<b>PRODUCTION INTERVAL:</b> _____ _____
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Form	ACO1 - Well Completion
Operator	SandRidge Exploration and Production LLC
Well Name	Roark 1-31H
Doc ID	1089124

#### Perforations

Shots Per Foot	Perforation Record	Material Record	Depth
6	10909-10912; 10755-10758; 10601-10604	4730 bbls Slickwtr, 36 bbls 15% NeFe HCl, 75M lbs 40/70 sd, 4766 TLTR	
6	10446-10449; 10292-10295; 10138-10141	4758 bbls Slickwtr, 36 bbls 15% NeFe HCl, 78M lbs 40/70 sd, 9851 TLTR	
6	9984-9987; 9830-9833; 9676-9679	4303 bbls Slickwtr, 31 bbls 15% NeFe HCl, 76M lbs 40/70 sd, 14433 TLTR	
6	9521-9524; 9367-9370; 9213-9216	4296 bbls Slickwtr, 33 bbls 15% NeFe HCl, 75M lbs 40/70 sd, 18999 TLTR	
6	9059-9062; 8905-8908; 8750-8753	4399 bbls Slickwtr, 36 bbls 15% NeFe HCl, 76M lbs 40/70 sd, 23638 TLTR	
6	8596-8599; 8442-8445; 8288-8291	4335 bbls Slickwtr, 36 bbls 15% NeFe HCl, 74M lbs 40/70 sd, 28190 TLTR	
6	8134-8137; 7980-7983; 7825-7828	4260 bbls Slickwtr, 36 bbls 15% NeFe HCl, 76M lbs 40/70 sd, 32644 TLTR	
6	7671-7674; 7517-7520; 7363-7366	4243 bbls Slickwtr, 36 bbls 15% NeFe HCl, 74M lbs 40/70 sd, 37047 TLTR	

Form	ACO1 - Well Completion
Operator	SandRidge Exploration and Production LLC
Well Name	Roark 1-31H
Doc ID	1089124

#### Perforations

Shots Per Foot	Perforation Record	Material Record	Depth
6	7209-7212; 7054-7057; 6900-6903	4310 bbls Slickwtr, 36 bbls 15% NeFe HCl, 76M lbs 40/70 sd, 41496 TLTR	
6	6746-6749; 6592-6595; 6438-6441	4300 bbls Slickwtr, 36 bbls 15% NeFe HCl, 75M lbs 40/70 sd, 45926 TLTR	
6	6283-6286; 6129-6132; 5978-5978	4257 bbls Slickwtr, 34 bbls 15% NeFe HCl, 75M lbs 40/70 sd, 50297 TLTR	
6	5821-5824; 5667-5670; 5513-5516	4233 bbls Slickwtr, 34 bbls 15% NeFe HCl, 75M lbs 40/70 sd, 54614 TLTR	
6	5358-5361; 5204-5207; 5050-5053	4674 bbls Slickwtr, 40 bbls 15% NeFe HCl, 76M lbs 40/70 sd, 59353 TLTR	

Form	ACO1 - Well Completion
Operator	SandRidge Exploration and Production LLC
Well Name	Roark 1-31H
Doc ID	1089124

### 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	90	Edge Services Grout	10	none
Surface	12.25	9.63	36	887	Lead/Tail Cement	450	3% Calcium Chloride, .25 lbm Poly-e-flake
Intermediate	8.75	7	29	5311	50/50 Poz Standard	200	.4% Halad (r)-9, 2lbm Kol-Seal, 2% Bentonite
Liner	6.13	4.5	11.6	9999	50/50 Poz Standard	590	.4% Hlad (R) -9, 2lbm Kol-Seal, 2% Bentonite

## Summary of Changes

Lease Name and Number: Roark 1-31H

API/Permit #: 15-007-23802-01-00

Doc ID: 1089124

Correction Number: 1

Approved By: Deanna Garrison

Field Name	Previous Value	New Value
Approved By	NAOMI JAMES	Deanna Garrison
Approved Date	04/02/2012	08/08/2012
Save Link	../kcc/detail/operatorEditDetail.cfm?docID=1070978	../kcc/detail/operatorEditDetail.cfm?docID=1089124
Well Type	OIL	GAS



**CONFIDENTIAL**

**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
- Conv. to GSW
- Plug Back: \_\_\_\_\_ Plug Back Total Depth \_\_\_\_\_
- Commingled      Permit #: \_\_\_\_\_
- Dual Completion      Permit #: \_\_\_\_\_
- SWD      Permit #: \_\_\_\_\_
- ENHR      Permit #: \_\_\_\_\_
- GSW      Permit #: \_\_\_\_\_

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

Spot Description: \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

\_\_\_\_\_ Feet from  North /  South Line of Section

\_\_\_\_\_ Feet from  East /  West Line of Section

Footages Calculated from Nearest Outside Section Corner:

- NE       NW       SE       SW

County: \_\_\_\_\_

Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Field Name: \_\_\_\_\_

Producing Formation: \_\_\_\_\_

Elevation: Ground: \_\_\_\_\_ Kelly Bushing: \_\_\_\_\_

Total 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**

- Letter of Confidentiality Received  
Date: \_\_\_\_\_
- Confidential Release Date: \_\_\_\_\_
- Wireline Log Received
- Geologist Report Received
- UIC Distribution
- ALT  I  II  III Approved by: \_\_\_\_\_ Date: \_\_\_\_\_



1070978

Operator Name: \_\_\_\_\_ Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West County: \_\_\_\_\_

**INSTRUCTIONS:** Show important tops and base 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. Attach complete copy of all Electric Wire-line Logs surveyed. Attach final geological well site report.

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 Electric Log Submitted Electronically <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(If no, Submit Copy)</i>  List All E. Logs Run:	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample  Name Top Datum
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CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
_____ Perforate _____ Protect Casing _____ Plug Back TD _____ Plug Off Zone				

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
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<b>DISPOSITION OF GAS:</b> <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	<b>METHOD OF COMPLETION:</b> <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <i>(Submit ACO-4)</i> <input type="checkbox"/> Other (Specify) _____	<b>PRODUCTION INTERVAL:</b> _____ _____
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Form	ACO1 - Well Completion
Operator	SandRidge Exploration and Production LLC
Well Name	Roark 1-31H
Doc ID	1070978

#### Perforations

Shots Per Foot	Perforation Record	Material Record	Depth
6	10909-10912; 10755-10758; 10601-10604	4730 bbls Slickwtr, 36 bbls 15% NeFe HCl, 75M lbs 40/70 sd, 4766 TLTR	
6	10446-10449; 10292-10295; 10138-10141	4758 bbls Slickwtr, 36 bbls 15% NeFe HCl, 78M lbs 40/70 sd, 9851 TLTR	
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6	9521-9524; 9367-9370; 9213-9216	4296 bbls Slickwtr, 33 bbls 15% NeFe HCl, 75M lbs 40/70 sd, 18999 TLTR	
6	9059-9062; 8905-8908; 8750-8753	4399 bbls Slickwtr, 36 bbls 15% NeFe HCl, 76M lbs 40/70 sd, 23638 TLTR	
6	8596-8599; 8442-8445; 8288-8291	4335 bbls Slickwtr, 36 bbls 15% NeFe HCl, 74M lbs 40/70 sd, 28190 TLTR	
6	8134-8137; 7980-7983; 7825-7828	4260 bbls Slickwtr, 36 bbls 15% NeFe HCl, 76M lbs 40/70 sd, 32644 TLTR	
6	7671-7674; 7517-7520; 7363-7366	4243 bbls Slickwtr, 36 bbls 15% NeFe HCl, 74M lbs 40/70 sd, 37047 TLTR	

Form	ACO1 - Well Completion
Operator	SandRidge Exploration and Production LLC
Well Name	Roark 1-31H
Doc ID	1070978

### 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	90	Edge Services Grout	10	none
Surface	12.25	9.63	36	887	Lead/Tail Cement	450	3% Calcium Chloride, .25 lbm Poly-e-flake
Intermediate	8.75	7	29	5311	50/50 Poz Standard	200	.4% Halad (r)-9, 2lbm Kol-Seal, 2% Bentonite
Liner	6.13	4.5	11.6	9999	50/50 Poz Standard	590	.4% Hlad (R) -9, 2lbm Kol-Seal, 2% Bentonite

# American Measurement Services

A Limited Liability Company

Ames, Oklahoma

Station Number: 14  
Producer: SANDRIDGE ENERGY  
Lease: ROARK 1-31H  
Sample Pressure: 65.0  
Sample Temperature:  
Cylinder Number: 8979  
Analysis By: AMS  
Date Sampled: 1/30/2012  
Analysis Run Date: 1/30/2012

Gas Components	Mole Percent	GPM
Methane	87.805	
Ethane	5.446	1.4476
Propane	2.249	0.6159
lButane	0.314	0.1022
NButane	0.729	0.2284
lPentan	0.198	0.0720
NPentan	0.247	0.0891
C6 +	0.466	0.2020
Nitrogen	2.064	
CO2	0.482	
	100.00%	2.7573

BTU @ 14.65 @ 60 F - Real

Dry 1115.1  
Wet 1095.6

Gasoline Content

Propane And Heavier 1.3096  
Butane And Heavier 0.6938  
Pentane And Heavier 0.3631

Specific Gravity - Real 0.6530  
Z = 0.9973

H2S Field Test: PPM

Field Remarks:

Analysis Based Upon GPA 2145, 2172, And 2261



**PAID**  
02/02/2012

# INVOICE

DATE	INVOICE #
12/8/2011	2744

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

REMIT TO
EDGE SERVICES, INC. BILLING DEPARTMENT PO BOX 14201 OKLAHOMA CITY, OK 73113

STARTING D...	WORK ORDER	RIG NUMBER	LEASE NAME	Terms
12/7/2011	2337	UNIT 310	ROARK 1-31H	Due on rec...

Description	Amount
DRILLED 100' OF 30" CONDUCTOR HOLE DRILLED 6' OF 76" HOLE & SET 6' x 6' TINHORN CELLAR FURNISHED 100' OF 20" CONDUCTOR PIPE FURNISHED MUD, WATER, AND TRUCKING FURNISHED WELDER AND MATERIALS FURNISHED 10 YARDS OF GRADE A 10 SACK GROUT FURNISHED GROUT PUMP DRILL MOUSE HOLES FURNISHED 90' OF 16" CONDUCTOR PIPE FOR MOUSE HOLE  TOTAL BID 5	24,650.00
<b>TOTAL</b>	<b>\$24,650.00</b>

RECEIVED

DEC 16 2011

HALLIBURTON

Cementing Job Summary

REGULATORY DEPT  
The Road to Excellence Starts with Safety

Sold To #: 305021	Ship To #: 2896235	Quote #:	Sales Order #: 9128411
Customer: SANDRIDGE ENERGY INC EBUSINESS		Customer Rep: Edwards, Tripp	
Well Name: Roark	Well #: 1-31H	API/UWI #:	
Field:	City (SAP): KIOWA	County/Parish: Barber	State: Kansas
Legal Description: Section 31 Township 34S Range 10W			
Contractor: Unit Drilling *		Rig/Platform Name/Num: Unit 310	
Job Purpose: Cement Surface Casing			
Well Type: Development Well		Job Type: Cement Surface Casing	
Sales Person: CRAWFORD, ROBERT		Srvc Supervisor: VAUGHAN, RYAN	MBU ID Emp #: 453194

Job Personnel

HES Emp Name	Exp Hrs	Emp #	HES Emp Name	Exp Hrs	Emp #	HES Emp Name	Exp Hrs	Emp #
HILL, RICKEY Lester	10	457261	SIMONAVICE, NICHOLAS Dennis	10	468186	VAUGHAN, RYAN Nicholas	10	453194

Equipment

HES Unit #	Distance-1 way	HES Unit #	Distance-1 way	HES Unit #	Distance-1 way	HES Unit #	Distance-1 way

Job Hours

Date	On Location Hours	Operating Hours	Date	On Location Hours	Operating Hours	Date	On Location Hours	Operating Hours
12/13/11	10	1						

TOTAL Total is the sum of each column separately

Job

Job Times

Formation Name	Formation Depth (MD)	Top	Bottom	Called Out	Date	Time	Time Zone	
Form Type	Job depth MD	900. ft	Job Depth TVD	887. ft	Job Started	13 - Dec - 2011	05:05	CST
Water Depth	Wk Ht Above Floor	4. ft	Job Completed	13 - Dec - 2011	06:12	CST		
Perforation Depth (MD)	From	To	Departed Loc	13 - Dec - 2011	07:45	CST		

Well Data

Description	New / Used	Max pressure psig	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft
Surface Open Hole Lower				12.25				736.	900.		
Surface Open Hole Upper				12.25				80.	736.		
Preset Conductor	Unknown		20.	19.124	94.			.	80.		
Surface Casing	Unknown		9.625	8.921	36.		J-55	.	900.		

Tools and Accessories


Type	Size	Qty	Make	Depth	Type	Size	Qty	Make	Depth	Type	Size	Qty	Make
Guide Shoe					Packer					Top Plug	9.625	1	HES
Float Shoe					Bridge Plug					Bottom Plug			
Float Collar					Retainer					SSR plug set			
Insert Float										Plug Container	9.625	1	HES
Stage Tool										Centralizers			

Miscellaneous Materials

Gelling Agt	Conc	Surfactant	Conc	Acid Type	Qty	Conc	%
Treatment Fld	Conc	Inhibitor	Conc	Sand Type	Size	Qty	

Fluid Data

Stage/Plug #: 1
-----------------

Fluid #	Stage Type	Fluid Name	Qty	Qty uom	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sk	Mix Fluid Gal/sk	Rate bbl/min	Total Mix Fluid Gal/sk
1	Lead Cement	EXTENDACEM (TM) SYSTEM (452981)	350.0	sacks	12.4	2.12	11.68		11.68
	3 %	CALCIUM CHLORIDE, PELLET, 50 LB (101509387)							
	0.25 lbm	POLY-E-FLAKE (101216940)							
	11.676 Gal	FRESH WATER							
2	Tail Cement	SWIFTCEM (TM) SYSTEM (452990)	100.0	sacks	15.6	1.2	5.32		5.32
	2 %	CALCIUM CHLORIDE, PELLET, 50 LB (101509387)							
	0.125 lbm	POLY-E-FLAKE (101216940)							
	5.319 Gal	FRESH WATER							
<b>Calculated Values</b>		<b>Pressures</b>			<b>Volumes</b>				
Displacement	66	Shut In: Instant		Lost Returns		Cement Slurry	153	Pad	
Top Of Cement	0	5 Min		Cement Returns	30	Actual Displacement	66	Treatment	
Frac Gradient		15 Min		Spacers	0	Load and Breakdown		Total Job	
<b>Rates</b>									
Circulating		Mixing	6	Displacement	6	Avg. Job	6		
Cement Left In Pipe	Amount	40 ft	Reason	Shoe Joint					
Frac Ring # 1 @	ID	Frac ring # 2 @	ID	Frac Ring # 3 @	ID	Frac Ring # 4 @	ID		
<b>The Information Stated Herein Is Correct</b>				Customer Representative Signature 					

The Road to Excellence Starts with Safety

Sold To #: 305021	Ship To #: 2896235	Quote #:	Sales Order #: 9145468
Customer: SANDRIDGE ENERGY INC EBUSINESS		Customer Rep: Edwards, Tripp	
Well Name: Roark	Well #: 1-31H	API/UWI #:	
Field:	City (SAP): KIOWA	County/Parish: Barber	State: Kansas
Legal Description: Section 31 Township 34S Range 10W			
Contractor: UNIT		Rig/Platform Name/Num: Unit 310	
Job Purpose: Cement Intermediate Casing			
Well Type: Development Well		Job Type: Cement Intermediate Casing	
Sales Person: CRAWFORD, ROBERT		Srvc Supervisor: WALTON, SCOTTY	MBU ID Emp #: 478229

Job Personnel

HES Emp Name	Exp Hrs	Emp #	HES Emp Name	Exp Hrs	Emp #	HES Emp Name	Exp Hrs	Emp #
SEELY, MATTHEW Lance	9.5	507547	TURNER, DANIEL J	9.5	461812	WALTON, SCOTTY Dwayne	9.5	478229

Equipment

HES Unit #	Distance-1 way	HES Unit #	Distance-1 way	HES Unit #	Distance-1 way	HES Unit #	Distance-1 way

Job Hours

Date	On Location Hours	Operating Hours	Date	On Location Hours	Operating Hours	Date	On Location Hours	Operating Hours
12-18-11	5	0	12-19-11	4.5	1			
TOTAL		Total is the sum of each column separately						

Job

Job Times

Formation Name	Formation Depth (MD)	Top	Bottom	Called Out	Date	Time	Time Zone
Form Type			BHST	On Location	18 - Dec - 2011	15:00	CST
Job depth MD	5207. ft		Job Depth TVD	Job Started	18 - Dec - 2011	19:00	CST
Water Depth			Wk Ht Above Floor	Job Completed	19 - Dec - 2011	02:32	CST
Perforation Depth (MD)	From		To	Departed Loc	19 - Dec - 2011	03:21	CST
						04:30	CST

Well Data

Description	New / Used	Max pressure psig	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft
Intermediate Open Hole				8.75				900.	5207.		
Intermediate Casing 1	Unknown		7.	6.276	26.	LTC	N-80		3889.		3889.
Intermediate Casing 2	Unknown		7.	6.276	26.	LTC	P-110	3889.	5207.	3889.	4733.
Surface Casing	Unknown		9.625	8.921	36.		J-55		900.		

Tools and Accessories

Type	Size	Qty	Make	Depth	Type	Size	Qty	Make	Depth	Type	Size	Qty	Make
Guide Shoe					Packer					Top Plug			
Float Shoe					Bridge Plug					Bottom Plug			
Float Collar					Retainer					SSR plug set			
Insert Float										Plug Container			
Stage Tool										Centralizers			

Miscellaneous Materials

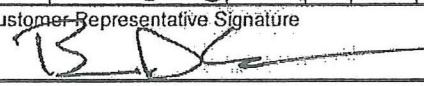
Gelling Agt	Conc	Surfactant	Conc	Acid Type	Qty	Conc	%
Treatment Fld	Conc	Inhibitor	Conc	Sand Type	Size	Qty	

Fluid Data

Stage/Plug #: 1

HALLIBURTON

*Cementing Job Summary*

Fluid #	Stage Type	Fluid Name	Qty	Qty uom	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sk	Mix Fluid Gal/sk	Rate bbl/min	Total Mix Fluid Gal/sk
1	Water Spacer			bbl	8.33	.0	.0	.0	
2	50/50 POZ STANDARD ( w/ 2% extra gel)	ECONOCEM (TM) SYSTEM (452992)		sacks	13.6	1.54	7.36		7.36
	0.4 %	HALAD(R)-9, 50 LB (100001617)							
	2 lbm	KOL-SEAL, BULK (100064233)							
	2 %	BENTONITE, BULK (100003682)							
	7.356 Gal	FRESH WATER							
<b>Calculated Values</b>		<b>Pressures</b>			<b>Volumes</b>				
Displacement		Shut In: Instant		Lost Returns		Cement Slurry		Pad	
Top Of Cement		5 Min		Cement Returns		Actual Displacement		Treatment	
Frac Gradient		15 Min		Spacers		Load and Breakdown		Total Job	
<b>Rates</b>									
Circulating		Mixing		Displacement		Avg. Job			
Cement Left In Pipe	Amount	40 ft	Reason	Shoe Joint					
Frac Ring # 1 @	ID	Frac ring # 2 @	ID	Frac Ring # 3 @	ID	Frac Ring # 4 @	ID		
The Information Stated Herein Is Correct				Customer Representative Signature 					



ATTENTION: IMPORTANT REGULATORY DOCUMENT  
retain for your records and file with  
appropriate agency.

HALLIBURTON

# Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 305021	Ship To #: 2896235	Quote #:	Sales Order #: 9163839
Customer: SANDRIDGE ENERGY INC EBUSINESS		Customer Rep: Edwards, Tripp	
Well Name: Roark	Well #: 1-31H	API/UWI #:	
Field:	City (SAP): KIOWA	County/Parish: Barber	State: Kansas
Legal Description: Section 31 Township 34S Range 10W			
Job Purpose: Cement Production Liner			
Well Type: Development Well		Job Type: Cement Production Liner	
Sales Person: CRAWFORD, ROBERT		Srvc Supervisor: UNDERWOOD, BILLY MBU ID Emp #: 159068	

### Job Personnel

HES Emp Name	Exp Hrs	Emp #	HES Emp Name	Exp Hrs	Emp #	HES Emp Name	Exp Hrs	Emp #
ERWIN, BOBBY	4	511974	GUYTON, JAMES Patrick	4	454880	TRAVIS, TONY Craig	5.5	367758
UNDERWOOD, BILLY Dale	5.5	159068						

### Equipment

HES Unit #	Distance-1 way	HES Unit #	Distance-1 way	HES Unit #	Distance-1 way	HES Unit #	Distance-1 way
10560510	60 mile	10688352	60 mile	10744543	60 mile	10744563	60 mile
10825967	60 mile	11288856	60 mile	11706678	60 mile		

### Job Hours

Date	On Location Hours	Operating Hours	Date	On Location Hours	Operating Hours	Date	On Location Hours	Operating Hours
12-17-11	5.5	1.5						
TOTAL			Total is the sum of each column separately					

### Job

### Job Times

Formation Name	Formation Depth (MD)	Top	Bottom	Called Out	Date	Time	Time Zone
				On Location	27 - Dec - 2011	11:00	CST
Form Type			BHST	Job Started	27 - Dec - 2011	14:10	CST
Job depth MD	11761. ft		Job Depth TVD	Job Completed	27 - Dec - 2011	15:30	CST
Water Depth			Wk Ht Above Floor	Departed Loc	27 - Dec - 2011	16:30	CST
Perforation Depth (MD)	From		To				

### Well Data

Description	New / Used	Max pressure psig	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft
Production Liner Open Hole				6.125				5207.	11761.	4733.	4733.
Intermediate Casing 1	Unknown		7.	6.276	26.	LTC	N-80		3889.		3889.
Intermediate Casing 2	Unknown		7.	6.276	26.	LTC	P-110	3889.	5207.	3889.	4733.
Production Liner	Unknown		4.5	4.	11.6		N-80	5007.	11761.	5007.	4733.
Drill Pipe	Unknown		4.	3.34	14.	Unknown			5007.		

### Tools and Accessories

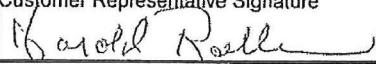
Type	Size	Qty	Make	Depth	Type	Size	Qty	Make	Depth	Type	Size	Qty	Make
Guide Shoe					Packer					Top Plug			
Float Shoe					Bridge Plug					Bottom Plug			
Float Collar					Retainer					SSR plug set			
Insert Float										Plug Container			
Stage Tool										Centralizers			

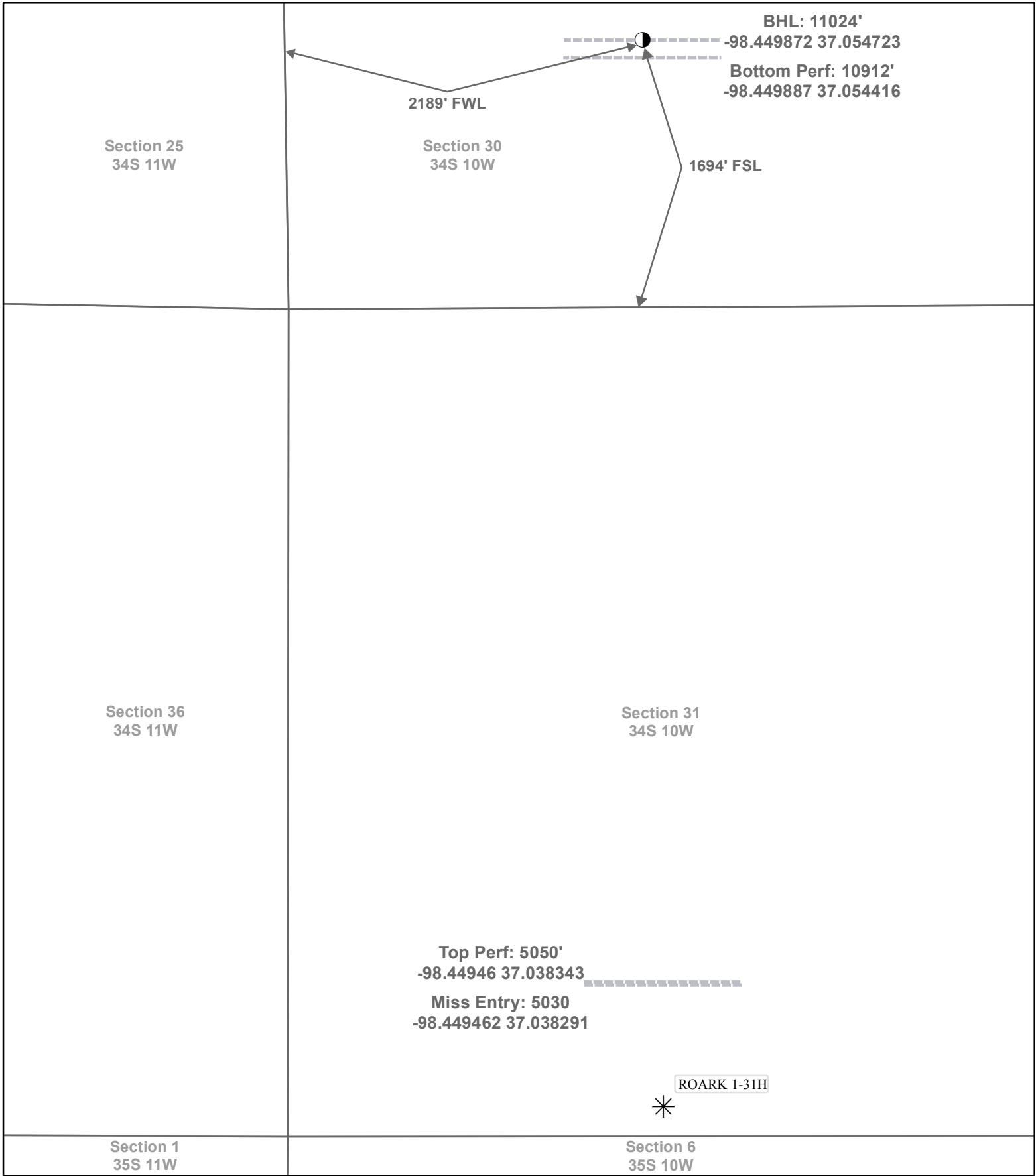
### Miscellaneous Materials

Gelling Agt	Conc	Surfactant	Conc	Acid Type	Qty	Conc	%
Treatment Fld	Conc	Inhibitor	Conc	Sand Type	Size	Qty	

HALLIBURTON

Cementing Job Summary

Fluid Data									
Stage/Plug #: 1									
Fluid #	Stage Type	Fluid Name	Qty	Qty uom	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sk	Mix Fluid Gal/sk	Rate bbl/min	Total Mix Fluid Gal/sk
1	Rig Caustic Water Spacer		10.00	bbl	8.5	.0	.0	.0	
2	50/50 POZ STANDARD ( w/ 2% extra gel)	ECONOCEM (TM) SYSTEM (452992)	590.0	sacks	13.6	1.54	7.36		7.36
	0.4 %	HALAD(R)-9, 50 LB (100001617)							
	2 lbm	KOL-SEAL, BULK (100064233)							
	2 %	BENTONITE, BULK (100003682)							
	7.356 Gal	FRESH WATER							
Calculated Values		Pressures			Volumes				
Displacement	140	Shut In: Instant		Lost Returns		Cement Slurry	162	Pad	
Top Of Cement		5 Min		Cement Returns		Actual Displacement	138	Treatment	
Frac Gradient		15 Min		Spacers	20	Load and Breakdown		Total Job	320
Rates									
Circulating	4	Mixing	5	Displacement	5	Avg. Job	5		
Cement Left In Pipe	Amount	80 ft	Reason	Shoe Joint					
Frac Ring # 1 @	ID	Frac ring # 2 @	ID	Frac Ring # 3 @	ID	Frac Ring # 4 @	ID		
The Information Stated Herein Is Correct				Customer Representative Signature					
									



BHL: 11024'

-98.449872 37.054723

Bottom Perf: 10912'

-98.449887 37.054416

2189' FWL

Section 30  
34S 10W

1694' FSL

Section 25  
34S 11W

Section 36  
34S 11W

Section 31  
34S 10W

Top Perf: 5050'  
-98.44946 37.038343

Miss Entry: 5030  
-98.449462 37.038291

ROARK 1-31H

Section 1  
35S 11W

Section 6  
35S 10W



Actual Bottom-Hole Location of Roark 1-31H  
Barber County, Kansas

T&R: 34S 10W  
Section: 30, 2189' FWL & 1694' FSL  
Long/Lat: -98.449872 37.054723

1 in = 807 ft

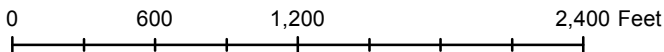


● Actual BH Location

\* SandRidge Wells

--- Perf

□ Sections



Draftsman:

Aaron Birk

Draft Date: 3/27/2012

Drawing Name/Number:

Addendum\_Roark\_1-31H.mxd

Coordinate System:

NAD 1927 State Plane  
Kansas South FIPS: 1502

Logo

Back to Well Completion

# Roark 1-31H (1070978)

**Actions**

View PDF
Delete
Edit
Certify & Submit
Request Confidentiality

**Attachments**

Two Year Confidentiality OPERATOR	View PDF Delete
Gas Analysis OPERATOR	View PDF Delete
Directional Survey OPERATOR	View PDF Delete
Cementing Reports OPERATOR	View PDF Delete
As Drilled Plat OPERATOR	View PDF Delete

Add Attachment

**Remarks**

Remarks to KCC

Add Remark

**Remarks**

Tiffany Golay  
03/07/012 09:15 Conductor weight= 94 lbs/ft Liner depth= 11,024  
am

Karen Sharp  
12/27/011 02:34 Measured Depth of well is 11,024' (4,723' TVD). 6750' Vertical section. BHL: 2310' FSL, 2310' FW  
pm OF SW/4 OF 30-34S-10W

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/>

Mark Sievers, Chairman  
Ward Loyd, Commissioner  
Thomas E. Wright, Commissioner

Sam Brownback, Governor

March 30, 2012

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

Re: ACO1  
API 15-007-23802-01-00  
Roark 1-31H  
SW/4 Sec.31-34S-10W  
Barber 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

	Measured Depth (ft)	Sub-Sea Incl. (ft)	Vertical Azim. (ft)	True Vert Depth (ft)	Northings (+) Southings (-) (ft)	Eastings (+) Westings (-) (ft)	DLS (deg/100')	FNL	FSL	FWL	FEL
SHL	0	0.00	0.00	0.00	0.00	0.00	0.00	-10335.00	-5055.00	2310.00	3157.00
BHL	11024	93.06	2.85	4723.95	6749.41	-120.55	0.00	3585.59	1694.41	2189.45	3277.55
Miss Entry	5030	71.49	1.30	4734.21	766.39	2.44	6.86	-9568.61	-4288.61	2312.44	3154.56
Top Perf	5050	73.09	1.24	4740.32	785.42	2.88	7.85	-9549.58	-4269.58	2312.88	3154.12
Bottom Perf	10912	91.98	8.44	4729.20	6637.63	-124.84	3.05	3697.37	1582.63	2185.16	3281.84

	Measured Depth (ft)	Sub-Sea Incl. (ft)	Vertical Azim. (ft)	True Vert Depth (ft)	Northings (+) Southings (-) (ft)	Eastings (+) Westings (-) (ft)	DLS (deg/100')	FNL	FSL	FWL	FEL
	0	0.0	0	0	0	0	0	-10335.00	-5055.00	2310.00	3157.00
	21	0.00	359.45	21.00	0.00	0.00	0.00	-10335.00	-5055.00	2310.00	3157.00
	1246	0.70	14.21	1245.97	7.25	1.84	0.06	-10327.75	-5047.75	2311.84	3155.16
	1720	1.29	3.61	1719.90	15.39	2.88	0.13	-10319.61	-5039.61	2312.88	3154.12
	2199	2.00	3.04	2198.70	29.11	3.67	0.15	-10305.89	-5025.89	2313.67	3153.33
	2678	1.93	343.60	2677.42	45.20	1.83	0.14	-10289.80	-5009.80	2311.83	3155.17
	2870	1.58	355.00	2869.33	50.94	0.69	0.26	-10284.06	-5004.06	2310.69	3156.31
	2967	1.69	356.93	2966.29	53.70	0.50	0.13	-10281.30	-5001.30	2310.50	3156.50
	3445	2.42	339.23	3443.98	70.17	-3.46	0.20	-10264.83	-4984.83	2306.54	3160.46
	3733	1.74	356.33	3731.80	80.22	-5.90	0.32	-10254.78	-4974.78	2304.10	3162.90
	3829	1.54	348.96	3827.76	82.94	-6.24	0.30	-10252.06	-4972.06	2303.76	3163.24
	3861	3.24	358.85	3859.73	84.27	-6.34	5.45	-10250.73	-4970.73	2303.66	3163.34
	3893	5.98	3.39	3891.62	86.84	-6.26	8.63	-10248.16	-4968.16	2303.74	3163.26
	3925	8.53	3.63	3923.36	90.87	-6.01	7.97	-10244.13	-4964.13	2303.99	3163.01
	3957	10.35	4.35	3954.93	96.10	-5.64	5.70	-10238.90	-4958.90	2304.36	3162.64
	3989	11.85	4.08	3986.33	102.25	-5.19	4.69	-10232.75	-4952.75	2304.81	3162.19
	4021	13.13	4.62	4017.57	109.15	-4.66	4.02	-10225.85	-4945.85	2305.34	3161.66
	4053	15.59	3.77	4048.57	117.06	-4.09	7.72	-10217.94	-4937.94	2305.91	3161.09
	4085	18.23	2.07	4079.18	126.36	-3.62	8.39	-10208.64	-4928.64	2306.38	3160.62
	4117	20.04	0.23	4109.41	136.84	-3.42	5.96	-10198.16	-4918.16	2306.58	3160.42
	4149	21.51	359.00	4139.33	148.19	-3.50	4.79	-10186.81	-4906.81	2306.50	3160.50

4181	22.58	358.01	4168.99	160.20	-3.82	3.54	-10174.80	-4894.80	2306.18	3160.82
4214	24.37	358.28	4199.26	173.34	-4.24	5.43	-10161.66	-4881.66	2305.76	3161.24
4246	26.72	359.30	4228.13	187.13	-4.53	7.47	-10147.87	-4867.87	2305.47	3161.53
4278	29.78	0.38	4256.31	202.28	-4.56	9.69	-10132.72	-4852.72	2305.44	3161.56
4310	32.64	0.67	4283.68	218.85	-4.41	8.95	-10116.15	-4836.15	2305.59	3161.41
4342	35.08	1.09	4310.25	236.68	-4.13	7.66	-10098.32	-4818.32	2305.87	3161.13
4374	36.61	2.06	4336.19	255.41	-3.61	5.10	-10079.59	-4799.59	2306.39	3160.61
4406	38.18	1.92	4361.61	274.83	-2.94	4.91	-10060.17	-4780.17	2307.06	3159.94
4438	40.27	2.37	4386.40	295.05	-2.18	6.59	-10039.95	-4759.95	2307.82	3159.18
4470	42.64	3.12	4410.38	316.21	-1.16	7.57	-10018.79	-4738.79	2308.84	3158.16
4502	43.95	3.36	4433.67	338.12	0.08	4.13	-9996.88	-4716.88	2310.08	3156.92
4533	45.12	2.90	4455.77	359.83	1.26	3.92	-9975.17	-4695.17	2311.26	3155.74
4564	46.70	1.19	4477.34	382.08	2.05	6.46	-9952.92	-4672.92	2312.05	3154.95
4597	49.48	0.72	4499.38	406.63	2.46	8.49	-9928.37	-4648.37	2312.46	3154.54
4629	50.51	1.19	4519.95	431.14	2.87	3.41	-9903.86	-4623.86	2312.87	3154.13
4660	50.75	0.67	4539.61	455.10	3.26	1.51	-9879.90	-4599.90	2313.26	3153.74
4692	50.98	0.29	4559.81	479.92	3.47	1.17	-9855.08	-4575.08	2313.47	3153.53
4724	51.02	359.72	4579.95	504.79	3.47	1.39	-9830.21	-4550.21	2313.47	3153.53
4756	50.93	359.50	4600.10	529.65	3.30	0.60	-9805.35	-4525.35	2313.30	3153.70
4788	51.03	358.76	4620.25	554.51	2.92	1.82	-9780.49	-4500.49	2312.92	3154.08
4820	53.40	358.81	4639.85	579.79	2.39	7.41	-9755.21	-4475.21	2312.39	3154.61
4852	57.07	359.21	4658.09	606.07	1.93	11.51	-9728.93	-4448.93	2311.93	3155.07
4884	59.87	359.57	4674.83	633.34	1.65	8.80	-9701.66	-4421.66	2311.65	3155.35
4916	62.30	359.57	4690.30	661.35	1.44	7.59	-9673.65	-4393.65	2311.44	3155.56
4948	64.97	0.10	4704.51	690.02	1.35	8.47	-9644.98	-4364.98	2311.35	3155.65
4979	68.42	0.50	4716.77	718.48	1.50	11.19	-9616.52	-4336.52	2311.50	3155.50
5011	70.08	1.48	4728.11	748.40	2.02	5.93	-9586.60	-4306.60	2312.02	3154.98
5043	72.46	1.17	4738.38	778.70	2.72	7.49	-9556.30	-4276.30	2312.72	3154.28
5075	75.36	1.48	4747.25	809.43	3.43	9.11	-9525.57	-4245.57	2313.43	3153.57
5106	78.27	1.19	4754.32	839.60	4.14	9.43	-9495.40	-4215.40	2314.14	3152.86
5138	79.65	1.47	4760.45	871.00	4.87	4.40	-9464.00	-4184.00	2314.87	3152.13
5170	81.35	2.09	4765.73	902.55	5.85	5.65	-9432.45	-4152.45	2315.85	3151.15
5203	83.26	2.11	4770.15	935.23	7.05	5.79	-9399.77	-4119.77	2317.05	3149.95
5234	86.11	1.78	4773.02	966.07	8.09	9.25	-9368.93	-4088.93	2318.09	3148.91

5266	88.40	1.96	4774.55	998.01	9.14	7.18	-9336.99	-4056.99	2319.14	3147.86
5326	90.65	1.65	4775.05	1057.98	11.03	3.79	-9277.02	-3997.02	2321.03	3145.97
5387	90.74	1.07	4774.31	1118.96	12.47	0.96	-9216.04	-3936.04	2322.47	3144.53
5478	90.34	1.13	4773.45	1209.94	14.22	0.44	-9125.06	-3845.06	2324.22	3142.78
5570	88.76	359.24	4774.17	1301.93	14.52	2.68	-9033.07	-3753.07	2324.52	3142.48
5661	89.48	358.30	4775.57	1392.89	12.56	1.30	-8942.11	-3662.11	2322.56	3144.44
5753	89.94	357.78	4776.04	1484.84	9.42	0.75	-8850.16	-3570.16	2319.42	3147.58
5845	90.57	356.86	4775.63	1576.73	5.12	1.21	-8758.27	-3478.27	2315.12	3151.88
5940	90.65	359.48	4774.62	1671.67	2.08	2.76	-8663.33	-3383.33	2312.08	3154.92
6037	90.65	359.25	4773.52	1768.66	1.01	0.24	-8566.34	-3286.34	2311.01	3155.99
6132	90.87	357.70	4772.26	1863.61	-1.52	1.65	-8471.39	-3191.39	2308.48	3158.52
6228	90.00	359.66	4771.53	1959.58	-3.73	2.23	-8375.42	-3095.42	2306.27	3160.73
6324	86.52	359.94	4774.44	2055.52	-4.07	3.64	-8279.48	-2999.48	2305.93	3161.07
6421	88.12	0.21	4778.98	2152.41	-3.94	1.67	-8182.59	-2902.59	2306.06	3160.94
6517	91.02	359.48	4779.70	2248.40	-4.20	3.12	-8086.60	-2806.60	2305.80	3161.20
6612	90.74	0.51	4778.24	2343.39	-4.21	1.12	-7991.61	-2711.61	2305.79	3161.21
6709	91.86	358.60	4776.04	2440.35	-4.96	2.28	-7894.65	-2614.65	2305.04	3161.96
6804	90.62	358.25	4773.98	2535.29	-7.57	1.36	-7799.71	-2519.71	2302.43	3164.57
6900	91.14	357.56	4772.51	2631.21	-11.08	0.90	-7703.79	-2423.79	2298.92	3168.08
6996	90.06	356.08	4771.50	2727.06	-16.40	1.91	-7607.94	-2327.94	2293.60	3173.40
7092	91.33	355.52	4770.34	2822.79	-23.44	1.45	-7512.21	-2232.21	2286.56	3180.44
7188	91.64	355.44	4767.85	2918.46	-31.00	0.33	-7416.54	-2136.54	2279.00	3188.00
7282	91.67	355.60	4765.13	3012.13	-38.34	0.17	-7322.87	-2042.87	2271.66	3195.34
7378	90.83	355.34	4763.04	3107.81	-45.92	0.92	-7227.19	-1947.19	2264.08	3202.92
7473	89.63	356.42	4762.66	3202.56	-52.74	1.70	-7132.44	-1852.44	2257.26	3209.74
7568	89.37	358.11	4763.49	3297.44	-57.28	1.80	-7037.56	-1757.56	2252.72	3214.28
7632	87.56	356.01	4765.20	3361.33	-60.56	4.33	-6973.67	-1693.67	2249.44	3217.56
7693	88.85	359.61	4767.11	3422.25	-62.88	6.27	-6912.75	-1632.75	2247.12	3219.88
7753	90.37	359.52	4767.52	3482.24	-63.34	2.54	-6852.76	-1572.76	2246.66	3220.34
7814	89.22	358.65	4767.74	3543.23	-64.31	2.36	-6791.77	-1511.77	2245.69	3221.31
7875	89.94	359.75	4768.19	3604.22	-65.17	2.16	-6730.78	-1450.78	2244.83	3222.17
7936	89.44	0.57	4768.52	3665.22	-65.00	1.57	-6669.78	-1389.78	2245.00	3222.00
7997	89.15	0.83	4769.27	3726.21	-64.25	0.64	-6608.79	-1328.79	2245.75	3221.25
8059	90.56	2.03	4769.43	3788.19	-62.70	2.99	-6546.81	-1266.81	2247.30	3219.70



8150	89.66	0.22	4769.25	3879.17	-60.92	2.22	-6455.83	-1175.83	2249.08	3217.92
8241	92.04	1.84	4767.90	3970.13	-59.28	3.16	-6364.87	-1084.87	2250.72	3216.28
8333	91.73	1.45	4764.87	4062.04	-56.64	0.54	-6272.96	-992.96	2253.36	3213.64
8426	91.69	2.04	4762.10	4154.96	-53.81	0.64	-6180.04	-900.04	2256.19	3210.81
8518	91.82	1.90	4759.28	4246.86	-50.65	0.21	-6088.14	-808.14	2259.35	3207.65
8609	91.82	1.45	4756.39	4337.78	-47.99	0.49	-5997.22	-717.22	2262.01	3204.99
8699	91.66	0.53	4753.66	4427.72	-46.44	1.04	-5907.28	-627.28	2263.56	3203.44
8790	90.59	1.18	4751.87	4518.69	-45.08	1.38	-5816.31	-536.31	2264.92	3202.08
8886	88.85	359.62	4752.34	4614.68	-44.41	2.43	-5720.32	-440.32	2265.59	3201.41
8981	89.38	0.21	4753.81	4709.67	-44.55	0.83	-5625.33	-345.33	2265.45	3201.55
9076	91.12	357.57	4753.39	4804.64	-46.39	3.33	-5530.36	-250.36	2263.61	3203.39
9172	90.44	358.74	4752.09	4900.58	-49.48	1.41	-5434.42	-154.42	2260.52	3206.48
9260	90.76	358.44	4751.17	4988.55	-51.65	0.50	-5346.45	-66.45	2258.35	3208.65
9324	90.95	357.82	4750.21	5052.50	-53.73	1.01	-5282.50	-2.50	2256.27	3210.73
9387	90.83	358.65	4749.23	5115.47	-55.67	1.33	5219.53	60.47	2254.33	3212.67
9482	91.51	358.45	4747.29	5210.42	-58.08	0.75	5124.58	155.42	2251.92	3215.08
9577	90.75	357.34	4745.42	5305.33	-61.57	1.42	5029.67	250.33	2248.43	3218.57
9672	90.52	355.22	4744.37	5400.12	-67.73	2.24	4934.88	345.12	2242.27	3224.73
9768	89.10	356.38	4744.68	5495.86	-74.76	1.91	4839.14	440.86	2235.24	3231.76
9863	88.64	356.44	4746.56	5590.65	-80.71	0.49	4744.35	535.65	2229.29	3237.71
9958	88.29	355.34	4749.10	5685.37	-87.51	1.21	4649.63	630.37	2222.49	3244.51
10051	90.37	354.75	4750.19	5778.01	-95.55	2.32	4556.99	723.01	2214.45	3252.55
10146	90.96	356.91	4749.09	5872.75	-102.45	2.36	4462.25	817.75	2207.55	3259.45
10241	91.48	356.77	4747.06	5967.58	-107.69	0.57	4367.42	912.58	2202.31	3264.69
10339	92.77	358.15	4743.43	6065.41	-112.03	1.93	4269.59	1010.41	2197.97	3269.03
10435	94.49	358.56	4737.35	6161.18	-114.78	1.84	4173.82	1106.18	2195.22	3271.78
10531	94.37	358.54	4729.94	6256.86	-117.20	0.13	4078.14	1201.86	2192.80	3274.20
10626	88.55	358.10	4727.52	6351.75	-119.98	6.14	3983.25	1296.75	2190.02	3276.98
10722	88.82	358.67	4729.72	6447.68	-122.69	0.66	3887.32	1392.68	2187.31	3279.69
10818	89.91	358.89	4730.79	6543.65	-124.73	1.16	3791.35	1488.65	2185.27	3281.73
10914	92.02	0.98	4729.17	6639.63	-124.84	3.09	3695.37	1584.63	2185.16	3281.84
10986	93.06	2.85	4725.98	6711.52	-122.44	2.97	3623.48	1656.52	2187.56	3279.44
11024	93.06	2.85	4723.95	6749.41	-120.55	0.00	3585.59	1694.41	2189.45	3277.55