



Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION 1231068
OIL & GAS CONSERVATION DIVISION

Form ACO-1
August 2013

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

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

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

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

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

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

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

Spot Description: _____

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

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

- NE NW SE SW

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

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

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

County: _____ Permit #: _____

AFFIDAVIT

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

Submitted Electronically

KCC Office Use ONLY

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

1231068

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: <input type="checkbox"/> Yes <input type="checkbox"/> No
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Date of First, Resumed Production, SWD or ENHR.	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____
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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: _____ _____
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INVOICE

DATE	INVOICE #
7/22/2014	4962

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	7/16/2014	3747	HWB	JAMES 3406 2-411	Due on rec...

Description

DRILLED 60' OF 30" CONDUCTOR HOLE
 DRILLED 6' OF 76" HOLE
 FURNISHED AND SET 6' X 6' TISHORN CELLAR
 FURNISHED 60' OF 20" CONDUCTOR PIPE
 FURNISHED MUD, WATER, AND TRUCKING
 FURNISHED WELDER AND MATERIALS
 FURNISHED 6 YARDS OF 10 SACK GROUT FOR CONDUCTOR HOLE
 FURNISHED GROUT PUMP

TOTAL BID \$14,000.00

AFE Number: DC 13973
 Well Name: JAMES 3406 2-411
 Code: 850-010
 Amount: 14,076.38
 Co. Man: James Fortney
 Co. Man Sig: [Signature]
 Notes: _____

Sales Tax (6.15%)	\$76.38
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TOTAL	\$14,076.38
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INVOICE

PO Box 93999
Southlake, TX 76092

Invoice Number: 144557
Invoice Date: Jul 23, 2014
Page: 1

Voice: (817) 546-7282
Fax: (817) 246-3361

Bill To:
SandRidge Energy Accounts Payable P O Box 1748 Oklahoma City, OK 73102

Customer ID	Field Ticket #	Payment Terms	
SandR	63146	Net 30 Days	
Job Location	Camp Location	Service Date	Due Date
KS1-01	Medicine Lodge	Jul 23, 2014	8/22/14

Quantity	Item	Description	Unit Price	Amount
1.00	WELL NAME	James 3406 #2-4H AFE #DC13973		
215.00	CEMENT MATERIALS	Class A Common	17.90	3,848.50
6.00	CEMENT MATERIALS	Chloride	64.00	384.00
54.00	CEMENT MATERIALS	Flo Seal	2.97	160.38
50.00	CEMENT MATERIALS	Sugar	4.00	200.00
226.59	CEMENT SERVICE	Cubic Feet Charge	2.48	561.94
413.36	CEMENT SERVICE	Ton Mileage Charge	2.60	1,074.74
1.00	CEMENT SERVICE	Surface	1,512.25	1,512.25
7.00	CEMENT SERVICE	Waiting on Location	440.00	3,080.00
40.00	CEMENT SERVICE	Pump Truck Mileage	7.70	308.00
1.00	CEMENT SERVICE	Manifold Rental	275.00	275.00
1.00	CEMENT SERVICE	Circulating Iron	450.00	450.00
40.00	CEMENT SERVICE	Light Vehicle Mileage	4.40	176.00
1.00	EQUIPMENT SALES	9-5/8 Top Rubber Plug	184.86	184.86
1.00	EQUIPMENT OPERATOR	Scott Priddy		
1.00	OPERATOR ASSISTANT	Thomas Gibson		
1.00	OPERATOR ASSISTANT	Kenneth Jack		
1.00	JOB DISCOUNT	Job Discount if paid within term	3,664.69	-3,664.69

ALL PRICES ARE NET, PAYABLE
30 DAYS FOLLOWING DATE OF
INVOICE. 1 1/2% CHARGED
THEREAFTER. IF ACCOUNT IS
CURRENT, TAKE DISCOUNT OF

\$

ONLY IF PAID ON OR BEFORE

Subtotal	8,550.98
Sales Tax	293.83
Total Invoice Amount	8,844.81
Payment/Credit Applied	
TOTAL	8,844.81

ALLIED OIL & GAS SERVICES, LLC

PO Box 93999
Southlake, TX 76092

INVOICE

Invoice Number: 144809
Invoice Date: Aug 1, 2014
Page: 1

Voice: (817) 546-7282
Fax: (817) 246-3361

Duplicate

Drop Shipment

Bill To:
SandRidge Energy Accounts Payable P O Box 1748 Oklahoma City, OK 73102

Ship to:
SandRidge Energy Accounts Payable P O Box 1748 Oklahoma City, OK 73102

Customer ID	Customer PO	Payment Terms	
SandR	63655	Net 30 Days	
Sales Rep ID	Shipping Method	Ship Date	Due Date
KS1-08	Medicine Lodge	8/1/14	8/31/14

Quantity	Item	Description	Unit Price	Amount
1.00	WELL NAME	James 3406 #2-4H AFE #DC13973		
100.00	CEMENT MATERIALS	Class A Common	17.90	1,790.00
240.00	CEMENT MATERIALS	Pozmix	14.40	3,456.00
30.00	CEMENT MATERIALS	Super Flush	58.70	1,761.00
81.00	CEMENT MATERIALS	FL-160	18.90	1,530.90
21.00	CEMENT MATERIALS	SA-51	17.55	368.55
19.00	CEMENT MATERIALS	CD-31	10.30	195.70
76.00	CEMENT MATERIALS	FL-160	18.90	1,436.40
351.84	CEMENT SERVICE	Cubic Feet Charge	2.48	872.56
603.16	CEMENT SERVICE	Ton Mileage Charge	2.60	1,568.22
1.00	CEMENT SERVICE	Intermediate	3,099.25	3,099.25
5.00	CEMENT SERVICE	Waiting on Location	440.00	2,200.00
40.00	CEMENT SERVICE	Light Vehicle Mileage	4.40	176.00
1.00	CEMENT SERVICE	Manifold Rental	275.00	275.00
40.00	CEMENT SERVICE	Pump Truck Mileage	7.70	308.00
1.00	CEMENT SERVICE	Circulating Iron	450.00	450.00
1.00	EQUIPMENT SALES	7 in Top Plug	99.45	99.45
1.00	CEMENT SUPERVISOR	Coy Price		
1.00	CEMENT SUPERVISOR	Jake Heard		
1.00	CEMENT SUPERVISOR	Ryan Reeves		
1.00	JOB DISCOUNT	Job Discount if paid within terms	5,876.11	-5,876.11

Subtotal	13,710.92
Sales Tax	654.25
Total Invoice Amount	14,365.17
Payment/Credit Applied	
TOTAL	14,365.17

Check/Credit Memo No:



SandRidge Energy
James #3406 2-4H
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 James#3306 2-4H 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 5000 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 207 Bbls of fresh water. The plug bumped and pressured up to 1300 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.

STAGE 1								
Port @ 9,201 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	70	16956	404					6
Slickwater	70	9600	229	40/70	0.25	Garnet	2400	3
Slickwater	70	4200	100					1
Slickwater	70	9600	229	40/70	0.50	Genoa	4800	3
Slickwater	70	4200	100					1
Slickwater	70	9467	225	40/70	0.75	Genoa	7100	3
Slickwater	70	4200	100					1
Slickwater	70	6000	143	40/70	1.00	Genoa	6000	2
Slickwater	70	3600	86	40/70	1.00	Garnet	3600	1
Slickwater	70	13217	315					4.5
TOTAL		81,789	1,947				23,900	28.5

STAGE 2								
Port @ 9,106 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	75	20022	477					6
Slickwater	75	12000	286	40/70	0.25	Garnet	3000	4
Slickwater	75	4200	100					1
Slickwater	75	11800	281	40/70	0.50	Genoa	5900	4
Slickwater	75	4200	100					1
Slickwater	75	11867	283	40/70	0.75	Genoa	8900	4
Slickwater	75	4200	100					1
Slickwater	75	7400	176	40/70	1.00	Genoa	7400	2
Slickwater	75	4400	105	40/70	1.00	Garnet	4400	1
Slickwater	75	13155	313					4.2
TOTAL		93,994	2,238				29,600	30.5

STAGE 3								
Port @ 8,958 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	80	14944	356					4
Slickwater	80	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	80	4200	100					1
Slickwater	80	8000	190	40/70	0.50	Genoa	4000	2
Slickwater	80	4200	100					1
Slickwater	80	8133	194	40/70	0.75	Genoa	6100	2
Slickwater	80	4200	100					1
Slickwater	80	5100	121	40/70	1.00	Genoa	5100	2
Slickwater	80	3000	71	40/70	1.00	Garnet	3000	1
Slickwater	80	13059	311					3.9
TOTAL		73,587	1,752				20,200	22.6

STAGE 4								
Port @ 8,858 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	750	18					1
Slickwater	80	20022	477					6
Slickwater	80	12000	286	40/70	0.25	Garnet	3000	4
Slickwater	80	4200	100					1
Slickwater	80	11800	281	40/70	0.50	Genoa	5900	4
Slickwater	80	4200	100					1
Slickwater	80	11867	283	40/70	0.75	Genoa	8900	4
Slickwater	80	4200	100					1
Slickwater	80	7400	176	40/70	1.00	Genoa	7400	2
Slickwater	80	4400	105	40/70	1.00	Garnet	4400	1
Slickwater	80	12994	309					3.9
TOTAL		93,833	2,234				29,600	28.6

STAGE 5								
Port @ 8,710 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
TOTAL		0	0				0	0.0

STAGE 6								
Port @ 8,609 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	750	18					1
Slickwater	90	14944	356					4
Slickwater	90	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	90	4200	100					1
Slickwater	90	8000	190	40/70	0.50	Genoa	4000	2
Slickwater	90	4200	100					1
Slickwater	90	8133	194	40/70	0.75	Genoa	6100	2
Slickwater	90	4200	100					1
Slickwater	90	5100	121	40/70	1.00	Genoa	5100	1
Slickwater	90	3000	71	40/70	1.00	Garnet	3000	1
Slickwater	90	12832	306					3.4
TOTAL		73,360	1,747				20,200	20.1

STAGE 7								
Port @ 8,508 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	95	14689	350					4
Slickwater	95	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	95	4200	100					1
Slickwater	95	7800	186	40/70	0.50	Genoa	3900	2
Slickwater	95	4200	100					1
Slickwater	95	7867	187	40/70	0.75	Genoa	5900	2
Slickwater	95	4200	100					1
Slickwater	95	4900	117	40/70	1.00	Genoa	4900	1
Slickwater	95	2900	69	40/70	1.00	Garnet	2900	1
Slickwater	95	12766	304					3.2
TOTAL		72,272	1,721				19,600	18.8

STAGE 8								
Port @ 8,410 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	19844	472					5
Slickwater	100	11600	276	40/70	0.25	Garnet	2900	3
Slickwater	100	4200	100					1
Slickwater	100	11800	281	40/70	0.50	Genoa	5900	3
Slickwater	100	4200	100					1
Slickwater	100	11733	279	40/70	0.75	Genoa	8800	3
Slickwater	100	4200	100					1
Slickwater	100	7400	176	40/70	1.00	Genoa	7400	2
Slickwater	100	4400	105	40/70	1.00	Garnet	4400	1
Slickwater	100	12702	302					3.0
TOTAL		92,830	2,210				29,400	22.8

STAGE 9								
Port @ 8,264 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	14867	354					4
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.50	Genoa	4000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.75	Genoa	6000	2
Slickwater	100	4200	100					1
Slickwater	100	5000	119	40/70	1.00	Genoa	5000	1
Slickwater	100	3000	71	40/70	1.00	Garnet	3000	1
Slickwater	100	12607	300					3.0
TOTAL		72,824	1,734				20,000	18.1

STAGE 10								
Port @ 8,163 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	13978	333					3
Slickwater	100	7200	171	40/70	0.25	Garnet	1800	2
Slickwater	100	4200	100					1
Slickwater	100	7400	176	40/70	0.50	Genoa	3700	2
Slickwater	100	4200	100					1
Slickwater	100	7333	175	40/70	0.75	Genoa	5500	2
Slickwater	100	4200	100					1
Slickwater	100	4600	110	40/70	1.00	Genoa	4600	1
Slickwater	100	2800	67	40/70	1.00	Garnet	2800	1
Slickwater	100	12541	299					3.0
TOTAL		69,203	1,648				18,400	17.2

STAGE 11								
Port @ 8,076 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	14189	338					3
Slickwater	100	7600	181	40/70	0.25	Garnet	1900	2
Slickwater	100	4200	100					1
Slickwater	100	7400	176	40/70	0.50	Genoa	3700	2
Slickwater	100	4200	100					1
Slickwater	100	7467	178	40/70	0.75	Genoa	5600	2
Slickwater	100	4200	100					1
Slickwater	100	4700	112	40/70	1.00	Genoa	4700	1
Slickwater	100	2800	67	40/70	1.00	Garnet	2800	1
Slickwater	100	12485	297					3.0
TOTAL		69,990	1,666				18,700	17.4

STAGE 12								
Port @ 7,982 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	18144	432					4
Slickwater	100	10400	248	40/70	0.25	Garnet	2600	2
Slickwater	100	4200	100					1
Slickwater	100	10400	248	40/70	0.50	Genoa	5200	2
Slickwater	100	4200	100					1
Slickwater	100	10533	251	40/70	0.75	Genoa	7900	3
Slickwater	100	4200	100					1
Slickwater	100	6600	157	40/70	1.00	Genoa	6600	2
Slickwater	100	3900	93	40/70	1.00	Garnet	3900	1
Slickwater	100	12424	296					3.0
TOTAL		85,751	2,042				26,200	21.1

STAGE 13								
Port @ 7,847 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	14689	350					3
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	100	4200	100					1
Slickwater	100	7800	186	40/70	0.50	Genoa	3900	2
Slickwater	100	4200	100					1
Slickwater	100	7867	187	40/70	0.75	Genoa	5900	2
Slickwater	100	4200	100					1
Slickwater	100	4900	117	40/70	1.00	Genoa	4900	1
Slickwater	100	2900	69	40/70	1.00	Garnet	2900	1
Slickwater	100	12336	294					2.9
TOTAL		71,841	1,711				19,600	17.8

STAGE 14								
Port @ 7,749 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	14367	342					3
Slickwater	100	7600	181	40/70	0.25	Garnet	1900	2
Slickwater	100	4200	100					1
Slickwater	100	7600	181	40/70	0.50	Genoa	3800	2
Slickwater	100	4200	100					1
Slickwater	100	7600	181	40/70	0.75	Genoa	5700	2
Slickwater	100	4200	100					1
Slickwater	100	4800	114	40/70	1.00	Genoa	4800	1
Slickwater	100	2900	69	40/70	1.00	Garnet	2900	1
Slickwater	100	12272	292					2.9
TOTAL		70,489	1,678				19,100	17.5

STAGE 15								
Port @ 7,655 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	14867	354					4
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.50	Genoa	4000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.75	Genoa	6000	2
Slickwater	100	4200	100					1
Slickwater	100	5000	119	40/70	1.00	Genoa	5000	1
Slickwater	100	3000	71	40/70	1.00	Garnet	3000	1
Slickwater	100	12211	291					2.9
TOTAL		72,427	1,724				20,000	18.0

STAGE 16								
Port @ 7,563 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	19089	454					5
Slickwater	100	11200	267	40/70	0.25	Garnet	2800	3
Slickwater	100	4200	100					1
Slickwater	100	11200	267	40/70	0.50	Genoa	5600	3
Slickwater	100	4200	100					1
Slickwater	100	11067	263	40/70	0.75	Genoa	8300	3
Slickwater	100	4200	100					1
Slickwater	100	7000	167	40/70	1.00	Genoa	7000	2
Slickwater	100	4200	100	40/70	1.00	Garnet	4200	1
Slickwater	100	12151	289					2.9
TOTAL		89,256	2,125				27,900	22.0

STAGE 17								
Port @ 7,416 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	14511	346					3
Slickwater	100	7600	181	40/70	0.25	Garnet	1900	2
Slickwater	100	4200	100					1
Slickwater	100	7800	186	40/70	0.50	Genoa	3900	2
Slickwater	100	4200	100					1
Slickwater	100	7733	184	40/70	0.75	Genoa	5800	2
Slickwater	100	4200	100					1
Slickwater	100	4900	117	40/70	1.00	Genoa	4900	1
Slickwater	100	2900	69	40/70	1.00	Garnet	2900	1
Slickwater	100	12055	287					2.9
TOTAL		70,850	1,687				19,400	17.6

STAGE 18								
Port @ 7,319 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	14867	354					4
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.50	Genoa	4000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.75	Genoa	6000	2
Slickwater	100	4200	100					1
Slickwater	100	5000	119	40/70	1.00	Genoa	5000	1
Slickwater	100	3000	71	40/70	1.00	Garnet	3000	1
Slickwater	100	11992	286					2.9
TOTAL		72,209	1,719				20,000	17.9

STAGE 19								
Port @ 7,218 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	14944	356					4
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.50	Genoa	4000	2
Slickwater	100	4200	100					1
Slickwater	100	8133	194	40/70	0.75	Genoa	6100	2
Slickwater	100	4200	100					1
Slickwater	100	5100	121	40/70	1.00	Genoa	5100	1
Slickwater	100	3000	71	40/70	1.00	Garnet	3000	1
Slickwater	100	11926	284					2.8
TOTAL		72,454	1,725				20,200	18.0

STAGE 20								
Port @ 7,121 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	19700	469					5
Slickwater	100	11600	276	40/70	0.25	Garnet	2900	3
Slickwater	100	4200	100					1
Slickwater	100	11600	276	40/70	0.50	Genoa	5800	3
Slickwater	100	4200	100					1
Slickwater	100	11600	276	40/70	0.75	Genoa	8700	3
Slickwater	100	4200	100					1
Slickwater	100	7300	174	40/70	1.00	Genoa	7300	2
Slickwater	100	4400	105	40/70	1.00	Garnet	4400	1
Slickwater	100	11863	282					2.8
TOTAL		91,413	2,177				29,100	22.5

STAGE 21								
Port @ 6,973 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	14256	339					3
Slickwater	100	7600	181	40/70	0.25	Garnet	1900	2
Slickwater	100	4200	100					1
Slickwater	100	7600	181	40/70	0.50	Genoa	3800	2
Slickwater	100	4200	100					1
Slickwater	100	7467	178	40/70	0.75	Genoa	5600	2
Slickwater	100	4200	100					1
Slickwater	100	4700	112	40/70	1.00	Genoa	4700	1
Slickwater	100	2800	67	40/70	1.00	Garnet	2800	1
Slickwater	100	11767	280					2.8
TOTAL		69,539	1,656				18,800	17.3

STAGE 22								
Port @ 6,884 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	14367	342					3
Slickwater	100	7600	181	40/70	0.25	Garnet	1900	2
Slickwater	100	4200	100					1
Slickwater	100	7600	181	40/70	0.50	Genoa	3800	2
Slickwater	100	4200	100					1
Slickwater	100	7600	181	40/70	0.75	Genoa	5700	2
Slickwater	100	4200	100					1
Slickwater	100	4800	114	40/70	1.00	Genoa	4800	1
Slickwater	100	2900	69	40/70	1.00	Garnet	2900	1
Slickwater	100	11709	279					2.8
TOTAL		69,926	1,665				19,100	17.4

STAGE 23								
Port @ 6,783 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	15044	358					4
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	100	4200	100					1
Slickwater	100	8200	195	40/70	0.50	Genoa	4100	2
Slickwater	100	4200	100					1
Slickwater	100	8133	194	40/70	0.75	Genoa	6100	2
Slickwater	100	4200	100					1
Slickwater	100	5100	121	40/70	1.00	Genoa	5100	1
Slickwater	100	3100	74	40/70	1.00	Garnet	3100	1
Slickwater	100	11643	277					2.8
TOTAL		72,571	1,728				20,400	18.0

STAGE 24								
Port @ 6,682 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	20022	477					5
Slickwater	100	12000	286	40/70	0.25	Garnet	3000	3
Slickwater	100	4200	100					1
Slickwater	100	11800	281	40/70	0.50	Genoa	5900	3
Slickwater	100	4200	100					1
Slickwater	100	11867	283	40/70	0.75	Genoa	8900	3
Slickwater	100	4200	100					1
Slickwater	100	7400	176	40/70	1.00	Genoa	7400	2
Slickwater	100	4400	105	40/70	1.00	Garnet	4400	1
Slickwater	100	11577	276					2.8
TOTAL		92,416	2,200				29,600	22.7

STAGE 25								
Port @ 6,534 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	750	18					1
Slickwater	100	14411	343					3
Slickwater	100	7600	181	40/70	0.25	Garnet	1900	2
Slickwater	100	4200	100					1
Slickwater	100	7600	181	40/70	0.50	Genoa	3800	2
Slickwater	100	4200	100					1
Slickwater	100	7733	184	40/70	0.75	Genoa	5800	2
Slickwater	100	4200	100					1
Slickwater	100	4800	114	40/70	1.00	Genoa	4800	1
Slickwater	100	2900	69	40/70	1.00	Garnet	2900	1
Slickwater	100	11481	273					2.7
TOTAL		69,875	1,664				19,200	17.4

STAGE 26								
Port @ 6,437 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	750	18					1
Slickwater	100	14944	356					4
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.50	Genoa	4000	2
Slickwater	100	4200	100					1
Slickwater	100	8133	194	40/70	0.75	Genoa	6100	2
Slickwater	100	4200	100					1
Slickwater	100	5100	121	40/70	1.00	Genoa	5100	1
Slickwater	100	3000	71	40/70	1.00	Garnet	3000	1
Slickwater	100	11418	272					2.7
TOTAL		71,946	1,713				20,200	17.8

STAGE 27								
Port @ 6,337 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	750	18					1
Slickwater	100	14867	354					4
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.50	Genoa	4000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.75	Genoa	6000	2
Slickwater	100	4200	100					1
Slickwater	100	5000	119	40/70	1.00	Genoa	5000	1
Slickwater	100	3000	71	40/70	1.00	Garnet	3000	1
Slickwater	100	11353	270					2.7
TOTAL		71,569	1,704				20,000	17.8

STAGE 28								
Port @ 6,236 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	19844	472					5
Slickwater	100	11600	276	40/70	0.25	Garnet	2900	3
Slickwater	100	4200	100					1
Slickwater	100	11800	281	40/70	0.50	Genoa	5900	3
Slickwater	100	4200	100					1
Slickwater	100	11733	279	40/70	0.75	Genoa	8800	3
Slickwater	100	4200	100					1
Slickwater	100	7400	176	40/70	1.00	Genoa	7400	2
Slickwater	100	4400	105	40/70	1.00	Garnet	4400	1
Slickwater	100	11287	269					2.7
TOTAL		91,415	2,177				29,400	22.5

STAGE 29								
Port @ 6,091 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	14822	353					4
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.50	Genoa	4000	2
Slickwater	100	4200	100					1
Slickwater	100	7867	187	40/70	0.75	Genoa	5900	2
Slickwater	100	4200	100					1
Slickwater	100	5000	119	40/70	1.00	Genoa	5000	1
Slickwater	100	3000	71	40/70	1.00	Garnet	3000	1
Slickwater	100	11193	266					2.7
TOTAL		71,232	1,696				19,900	17.7

STAGE 30								
Port @ 5,991 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	14867	354					4
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.50	Genoa	4000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.75	Genoa	6000	2
Slickwater	100	4200	100					1
Slickwater	100	5000	119	40/70	1.00	Genoa	5000	1
Slickwater	100	3000	71	40/70	1.00	Garnet	3000	1
Slickwater	100	11128	265					2.6
TOTAL		71,344	1,699				20,000	17.7

STAGE 31								
Port @ 5,890 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	750	18					1
Slickwater	100	14944	356					4
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.50	Genoa	4000	2
Slickwater	100	4200	100					1
Slickwater	100	8133	194	40/70	0.75	Genoa	6100	2
Slickwater	100	4200	100					1
Slickwater	100	5100	121	40/70	1.00	Genoa	5100	1
Slickwater	100	3000	71	40/70	1.00	Garnet	3000	1
Slickwater	100	11062	263					2.6
TOTAL		71,590	1,705				20,200	17.8

STAGE 32								
Port @ 5,789 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	750	18					1
Slickwater	100	14944	356					4
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.50	Genoa	4000	2
Slickwater	100	4200	100					1
Slickwater	100	8133	194	40/70	0.75	Genoa	6100	2
Slickwater	100	4200	100					1
Slickwater	100	5100	121	40/70	1.00	Genoa	5100	1
Slickwater	100	3000	71	40/70	1.00	Garnet	3000	1
Slickwater	100	10996	262					2.6
TOTAL		71,524	1,703				20,200	17.7

STAGE 33								
Port @ 5,688 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	ime, min
15% HCl acid	20	750	18					1
Slickwater	100	14944	356					4
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.50	Genoa	4000	2
Slickwater	100	4200	100					1
Slickwater	100	8133	194	40/70	0.75	Genoa	6100	2
Slickwater	100	4200	100					1
Slickwater	100	5100	121	40/70	1.00	Genoa	5100	1
Slickwater	100	3000	71	40/70	1.00	Garnet	3000	1
Slickwater	100	10930	260					2.6
TOTAL		71,458	1,701				20,200	17.7

STAGE 34								
Port @ 5,588 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	14944	356					4
Slickwater	100	8000	190	40/70	0.25	Garnet	2000	2
Slickwater	100	4200	100					1
Slickwater	100	8000	190	40/70	0.50	Genoa	4000	2
Slickwater	100	4200	100					1
Slickwater	100	8133	194	40/70	0.75	Genoa	6100	2
Slickwater	100	4200	100					1
Slickwater	100	5100	121	40/70	1.00	Genoa	5100	1
Slickwater	100	3000	71	40/70	1.00	Garnet	3000	1
Slickwater	100	10865	259					2.6
TOTAL		71,393	1,700				20,200	17.7

STAGE 35								
Port @ 5,487 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Con	Prop type	Prop, lbs	Time, min
15% HCl acid	20	750	18					1
Slickwater	100	12233	291					3
Slickwater	100	6000	143	40/70	0.25	Garnet	1500	1
Slickwater	100	4200	100					1
Slickwater	100	6000	143	40/70	0.50	Genoa	3000	1
Slickwater	100	4200	100					1
Slickwater	100	6000	143	40/70	0.75	Genoa	4500	1
Slickwater	100	4200	100					1
Slickwater	100	3800	90	40/70	1.00	Genoa	3800	1
Slickwater	100	2300	55	40/70	1.00	Garnet	2300	1
Slickwater	100	10799	257					2.6
TOTAL		60,483	1,440				15,100	15.1

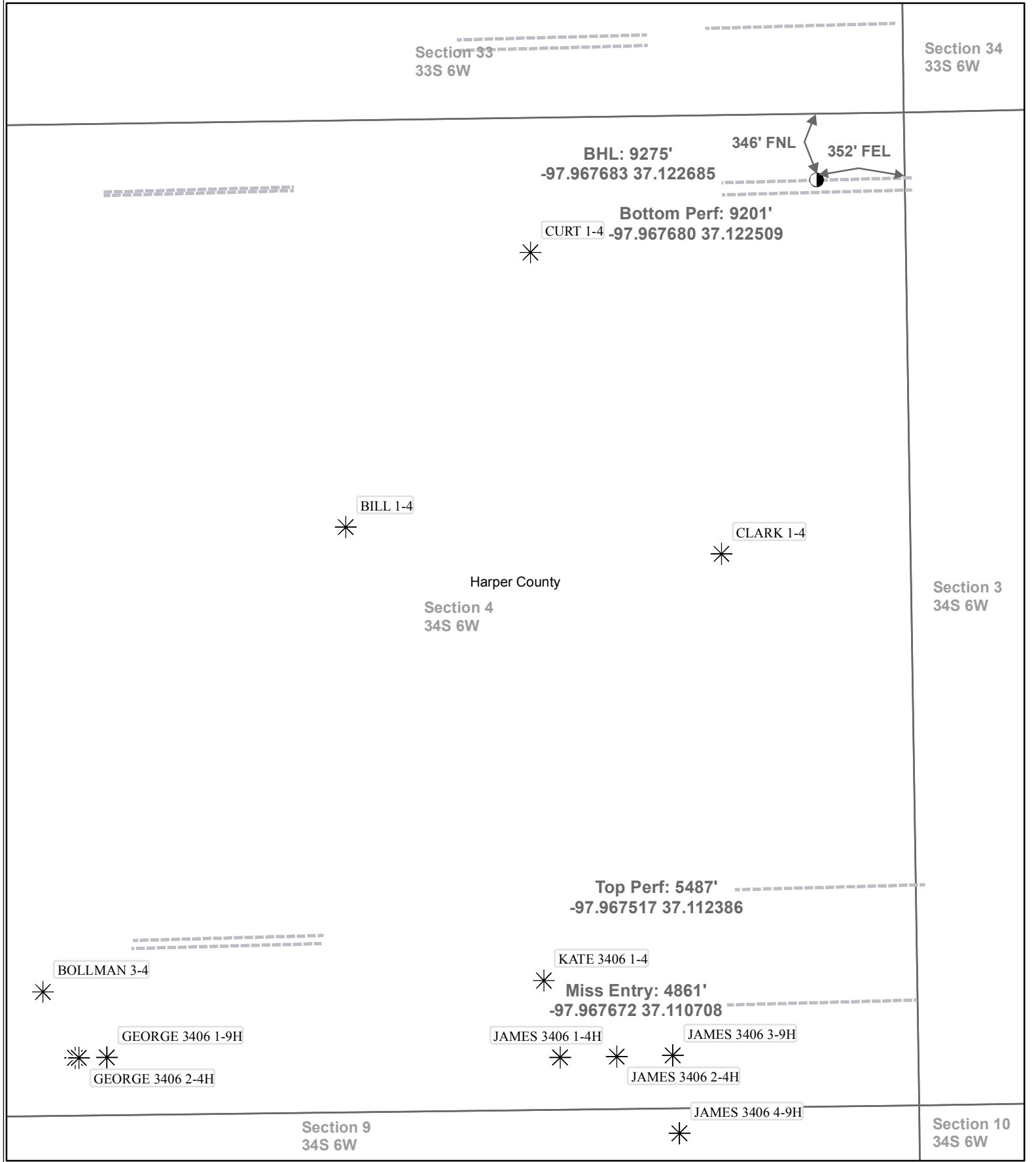
Directional Survey Calculations	Measured Depth (ft)	Sub-Sea Incl. (deg)	Vertical Azim. (ft)	True Vert Depth (ft)	Northings (+) Southings (-) (ft)	Eastings (+) Westings (-) (ft)	Vert Section (ft)	DLS deg/100' (deg)	FNL	FSL	FWL	FEL
SHL	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4989	250	3703	1600
BHL	9275	87.20	0.20	4553.74	4661.51	1174.82	4671.78	0.00	346	4892	4945	352
Miss Entry	4861	72.40	13.98	4485.82	259.14	1086.83	268.80	9.36	4747	491	4793	510
Top Port	5487	90.38	2.17	4550.44	875.08	1144.52	885.23	2.08	4132	1106	4860	442
Bottom Port	9210	87.24	0.22	4550.59	4596.59	1174.58	4606.86	0.81	411	4827	4944	353

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
	SW Corner XY Coord	2150473	166766		2154247	161835	0.0154863	-0.0158518	0.0167861	-0.0144955
	NE Corner XY Coord	2155768	166848							
	SE Corner XY Coord	2155851	161612							

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
0	0.0	0	0	0	0	0	0	4989	250	3703	1600
374	0.2	121.32	374.00	-0.34	0.56	-0.33	0.05	4990	250	3703	1600
855	0.65	149.88	854.98	-3.14	2.64	-3.11	0.10	4993	247	3705	1598
1117	0.94	192.15	1116.96	-6.52	2.94	-6.50	0.24	4996	243	3705	1598
1204	1.68	137.76	1203.94	-8.16	3.64	-8.13	1.57	4998	242	3706	1597
1292	6.53	102.64	1291.70	-10.22	9.40	-10.13	5.96	5000	240	3712	1591
1379	12.1	97.89	1377.52	-12.55	23.27	-12.34	6.46	5002	237	3726	1577
1466	15.4	97.68	1462.01	-15.35	43.75	-14.96	3.79	5005	234	3746	1557
1554	18.42	100.39	1546.20	-19.42	69.02	-18.80	3.55	5010	229	3771	1532
1659	20.08	100.62	1645.33	-25.73	103.05	-24.81	1.58	5017	222	3805	1498
1753	20.51	101.28	1733.49	-31.93	135.06	-30.72	0.52	5023	216	3837	1466
1845	19.04	100.47	1820.06	-37.81	165.62	-36.33	1.63	5030	209	3868	1435
1938	20.36	103.38	1907.62	-44.31	196.28	-42.56	1.77	5037	202	3898	1405
2031	18.42	101.82	1995.34	-51.06	226.41	-49.04	2.16	5044	195	3928	1375
2124	19.22	101.06	2083.37	-57.01	255.81	-54.73	0.90	5050	189	3958	1346
2218	19.34	102.17	2172.10	-63.26	286.21	-60.71	0.41	5057	182	3988	1315
2311	20.72	102.02	2259.47	-69.93	317.36	-67.10	1.48	5064	175	4019	1284
2405	20.61	101.54	2347.42	-76.70	349.83	-73.59	0.21	5072	167	4051	1252
2499	19.44	101.76	2435.74	-83.20	381.36	-79.80	1.25	5079	160	4083	1220
2592	20.63	104.03	2523.11	-90.33	412.40	-86.65	1.53	5086	153	4114	1189
2685	19.42	104.52	2610.48	-98.18	443.27	-94.23	1.31	5094	144	4144	1159
2779	19.73	98.55	2699.06	-104.45	474.09	-100.23	2.15	5101	138	4175	1128
2872	19.79	98.78	2786.58	-109.19	505.17	-104.69	0.11	5106	132	4206	1097
2965	19.08	98.73	2874.28	-113.90	535.76	-109.13	0.76	5112	127	4237	1067
3040	19.94	102.44	2944.98	-118.52	560.36	-113.52	2.01	5117	122	4261	1042
3127	19.48	101.23	3026.88	-124.54	589.08	-119.29	0.71	5123	115	4290	1013
3215	18.23	101.88	3110.16	-130.23	616.94	-124.73	1.44	5129	109	4318	986
3302	21.32	108.52	3192.03	-138.06	645.26	-132.31	4.39	5137	101	4346	957
3389	20.82	107.7	3273.27	-147.74	674.86	-141.73	0.87	5148	91	4375	928
3477	20.38	104.73	3355.70	-156.35	704.44	-150.07	1.21	5157	82	4405	899
3564	20.19	103.07	3437.30	-163.59	733.71	-157.06	0.70	5164	74	4434	869
3652	20.38	101.54	3519.84	-170.09	763.52	-163.29	0.64	5171	67	4464	840
3739	21.5	100.96	3601.10	-176.15	794.01	-169.08	1.31	5178	60	4494	809
3826	22.09	103.28	3681.88	-182.94	825.59	-175.59	1.20	5185	53	4525	778
3914	18.57	103.22	3764.38	-189.95	855.34	-182.33	4.00	5193	46	4555	748
3957	16.4	100.17	3805.40	-192.59	867.98	-184.85	5.48	5195	43	4568	736
4001	15.95	85.25	3847.67	-193.18	880.13	-185.34	9.48	5196	42	4580	723
4045	17.22	73.7	3889.85	-190.86	892.41	-182.90	8.01	5194	44	4592	711
4088	19.33	66.63	3930.69	-186.25	905.05	-178.18	7.11	5190	48	4605	698
4132	21.38	57.93	3971.95	-179.10	918.54	-170.91	8.30	5183	55	4618	685
4176	23.43	51.7	4012.63	-169.41	932.20	-161.11	7.12	5173	65	4632	671
4220	24.82	47.93	4052.79	-157.80	945.93	-149.38	4.71	5162	76	4646	657
4263	25.91	41.69	4091.65	-144.74	958.88	-136.20	6.71	5149	89	4659	644
4307	28.57	35.26	4130.77	-128.96	971.35	-120.31	9.01	5133	105	4672	631
4351	31.86	30.1	4168.80	-110.32	983.25	-101.56	9.52	5115	123	4684	619
4394	34.75	24.41	4204.74	-89.33	994.01	-80.48	9.89	5094	144	4695	608
4438	37.15	20.47	4240.36	-65.46	1003.84	-56.52	7.57	5070	168	4705	598
4481	39.4	17.84	4274.12	-40.30	1012.57	-31.28	6.46	5045	193	4715	589
4525	41.95	15.68	4307.49	-12.84	1020.82	-3.75	6.62	5018	220	4723	580
4569	45.51	14.18	4339.28	16.55	1028.64	25.70	8.43	4989	249	4731	572
4612	49.99	13.58	4368.18	47.44	1036.27	56.66	10.47	4958	280	4739	563
4656	54.2	13.33	4395.21	81.20	1044.35	90.49	9.58	4924	314	4748	555
4700	58.7	13.46	4419.52	116.86	1052.84	126.23	10.23	4889	349	4757	546
4743	62.61	12.74	4440.59	153.36	1061.33	162.80	9.21	4853	385	4766	537
4787	66.04	13.6	4459.65	191.97	1070.37	201.49	7.99	4814	424	4776	527
4831	69.35	13.73	4476.35	231.52	1079.98	241.12	7.53	4775	463	4786	517
4875	73.83	14.1	4490.24	272.03	1090.02	281.72	10.21	4734	504	4796	506
4918	77.73	15.32	4500.80	312.34	1100.61	322.12	9.48	4694	544	4808	495
4962	78.6	12.92	4509.83	354.10	1111.11	363.97	5.69	4653	585	4819	484
5005	79.25	8.06	4518.09	395.58	1118.79	405.52	11.19	4611	627	4827	475
5049	80.79	5.72	4525.72	438.59	1123.99	448.58	6.30	4568	670	4833	470
5093	83.41	3.6	4531.76	482.03	1127.52	492.04	7.63	4525	713	4837	465
5136	85.8	2.82	4535.81	524.76	1129.92	534.80	5.84	4482	756	4840	462
5180	86.37	2.17	4538.81	568.62	1131.83	578.67	1.96	4438	800	4843	460
5224	86.57	2.71	4541.52	612.50	1133.70	622.56	1.31	4395	843	4845	457

Top of Tangent @ 5136'

	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
Btm of Tangent @ 5378'	5267	87.06	2.19	4543.91	655.39	1135.54	665.47	1.66	4352	886	4848	455
	5311	87.41	2.42	4546.03	699.30	1137.30	709.40	0.95	4308	930	4850	452
	5355	87.62	2.37	4547.94	743.22	1139.14	753.33	0.49	4264	974	4852	450
	5399	88.04	2.62	4549.57	786.15	1141.01	796.28	1.14	4221	1017	4855	447
	5430	89.3	2.19	4550.31	818.11	1142.35	828.25	4.16	4189	1049	4857	445
	5482	90.42	2.17	4550.44	870.08	1144.33	880.23	2.15	4137	1101	4859	442
	5569	89.65	2.1	4550.38	957.01	1147.57	967.19	0.89	4050	1188	4864	438
	5662	88.67	1.65	4551.75	1049.95	1150.61	1060.15	1.16	3957	1281	4868	433
	5755	89.44	359.83	4553.28	1142.93	1151.81	1153.14	2.12	3864	1374	4871	431
	5848	90.56	359.71	4553.28	1235.93	1151.44	1246.13	1.21	3771	1467	4872	429
	5940	90.49	359.17	4552.44	1327.92	1150.54	1338.11	0.59	3679	1559	4872	429
	6034	89.72	358.68	4552.27	1421.90	1148.78	1432.07	0.97	3585	1653	4872	429
	6128	90.63	0.16	4551.98	1515.89	1147.83	1526.05	1.85	3491	1747	4872	429
	6221	90.42	0.33	4551.13	1608.89	1148.23	1619.04	0.29	3398	1840	4874	427
	6315	90.42	359.96	4550.44	1702.88	1148.46	1713.04	0.39	3304	1934	4876	425
	6408	93.43	0.12	4547.31	1795.82	1148.53	1805.97	3.24	3211	2026	4877	423
	6502	92.8	0.35	4542.21	1889.68	1148.91	1899.83	0.71	3118	2120	4879	422
	6595	90.98	1	4539.14	1982.62	1150.01	1992.78	2.08	3025	2213	4881	419
	6689	91.33	1.46	4537.24	2076.58	1152.03	2086.75	0.61	2931	2307	4885	416
	6782	93.08	1.34	4533.67	2169.48	1154.30	2179.67	1.89	2838	2400	4888	412
	6875	90.7	0.45	4530.60	2262.41	1155.75	2272.61	2.73	2745	2493	4891	409
	6968	90.14	359.92	4529.92	2355.40	1156.05	2365.60	0.83	2652	2586	4893	407
	7055	89.44	359.84	4530.24	2442.40	1155.87	2452.59	0.81	2565	2673	4894	406
	7143	88.46	359.95	4531.85	2530.39	1155.70	2540.57	1.12	2477	2761	4895	405
	7230	89.58	0.35	4533.34	2617.37	1155.93	2627.56	1.37	2390	2848	4896	403
	7318	90.42	0.88	4533.34	2705.37	1156.88	2715.56	1.13	2302	2936	4899	401
	7405	90.42	1.29	4532.70	2792.35	1158.52	2802.55	0.47	2215	3023	4902	398
	7491	90	0.67	4532.38	2878.33	1159.99	2888.55	0.87	2129	3109	4904	395
	7578	89.72	0.29	4532.60	2965.33	1160.72	2975.54	0.54	2042	3196	4906	393
	7665	89.44	0.11	4533.23	3052.33	1161.03	3062.54	0.38	1955	3283	4908	391
7753	89.16	0.19	4534.31	3140.32	1161.26	3150.53	0.33	1867	3371	4909	389	
7840	88.74	359.58	4535.90	3227.31	1161.08	3237.51	0.85	1780	3458	4910	388	
7925	87.76	358.3	4538.50	3312.25	1159.51	3322.44	1.90	1695	3543	4910	388	
8013	89.65	358.59	4540.49	3400.19	1157.12	3410.35	2.17	1607	3631	4909	389	
8100	92.8	0.13	4538.63	3487.15	1156.15	3497.30	4.03	1520	3718	4909	389	
8187	92.03	1.78	4534.96	3574.06	1157.60	3584.22	2.09	1433	3805	4912	386	
8275	89.58	1.94	4533.73	3662.00	1160.46	3672.18	2.79	1345	3892	4916	382	
8362	88.81	1.67	4534.95	3748.94	1163.20	3759.15	0.94	1259	3979	4920	378	
8450	88.95	0.97	4536.67	3836.90	1165.22	3847.12	0.81	1171	4067	4923	374	
8537	88.18	0.67	4538.85	3923.87	1166.47	3934.09	0.95	1084	4154	4926	372	
8624	88.39	1.07	4541.45	4010.82	1167.79	4021.05	0.52	997	4241	4928	369	
8712	90.77	1.02	4542.10	4098.79	1169.39	4109.04	2.71	909	4329	4931	366	
8799	90.7	0.38	4540.98	4185.78	1170.46	4196.03	0.74	822	4416	4934	364	
8887	89.44	0.95	4540.87	4273.77	1171.48	4284.03	1.57	734	4504	4936	361	
8974	88.74	0.57	4542.25	4360.75	1172.63	4371.02	0.92	647	4591	4938	359	
9061	88.11	0.53	4544.65	4447.71	1173.47	4457.98	0.73	560	4678	4940	356	
9149	87.69	0.46	4547.87	4535.65	1174.23	4545.92	0.48	472	4766	4942	354	
9215	87.20	0.20	4550.81	4601.58	1174.61	4611.86	0.84	406	4832	4944	353	
9275	87.20	0.20	4553.74	4661.51	1174.82	4671.78	0.00	346	4892	4945	352	



Actual Bottom-Hole Location of James 3406 2-4H
 T&R: 34S 6W
 Section: 4, 352 FEL & 346' FNL
 -97.967683 37.122685

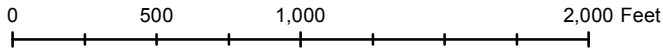
1 in = 667 ft

● Actual BH Location

* SandRidge Wells

--- Perf

□ Sections



Draftsman: Dory Deines	Draft Date: 11/7/2014
Drawing Name/Number: Addendum_James 3406 2-4H.mxd	
Coordinate System: NAD 1927 State Plane Kansas South FIPS: 1502	

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	9/27/2014
Job End Date:	9/28/2014
State:	Kansas
County:	Harper
API Number:	15-077-22074-01-00
Operator Name:	SandRidge Energy
Well Name and Number:	James 3406 2-4H
Longitude:	-97.97107886
Latitude:	37.10991962
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	4,553
Total Base Water Volume (gal):	2,714,964
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	95.25815	None
Sand (Proppant)	Archer	Proppant					
			Silica Substrate	NA	100.00000	3.12465	None
C102	Bosque Disposal Systems, LLC	Oxidizer					
			Chlorine Dioxide	10049-04-4	15.00000	0.27100	
Hydrochloric Acid (15%)	Archer	Acidizing					
			Hydrochloric Acid	7647-01-0	15.00000	0.14330	None
			NONYL PHENOL, 4 MOL	104-40-5	10.00000	0.00453	None
			Methyl Alcohol	67-56-1	80.00000	0.00119	None
			thiourea-formaldehyde copolymer	68527-49-1	15.00000	0.00022	None
AIC	Archer	Liquid Acid Iron Control					
			Acetic Acid	64-19-7	50.00000	0.00265	None
			Citric Acid	77-92-9	30.00000	0.00159	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		0.03507	

		WATER	7732-18-5		0.02719
		TRADE SECRET	N/A		0.01813
		Aliphatic Hydrocarbon	64742-47-8		0.01754
		Anionic Polymer	N/A		0.01754
		Water	7732-18-5		0.00838
		ISOPROPANOL	67-63-0		0.00453
		METHANOL	67-56-1		0.00453
		Oxyalkylated Alcohol	68002-97-1		0.00292
		Polyol Ester	N/A		0.00292
		Water	7732-18-5		0.00185
		Acrylic Polymer	28205-96-1		0.00140
		Sodium Salt of Phosphate Ester	68131-72-6		0.00140
		Polyglycol Ester	N/A		0.00058
		Alcohol Ethoxylate Surfactants	N/A		0.00022
		n-olefins	N/A		0.00012
		Propargyl Alcohol	107-19-7		0.00009
		Tetrasodium Ethylenediaminetetraacetate	64-02-8		0.00006
		Acetic Acid	64-19-7		
		Buffer	N/A		
		Cinnamic Aldehyde	104-55-2		
		Surfactant	N/A		
		Water	7732-18-5		

* 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)