Confidentiality Requested:
☑ Yes ☐ No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

1225704

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 # 34192
Name: SandRidge Exploration and Production LLC
Address 1: 123 ROBERT S. KERR AVE
Address 2:
City: OKLAHOMA CITY State: OK Zip: 73102 + 6406
Contact Person: Tiffany Golay
Phone: (405) 429-6543
CONTRACTOR: License # 34464
Name: Lariat Services, Inc. dba Chaparral Supply, Hondo Heavy Haul
Wellsite Geologist: Hanna Thornberg
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 #:

6/16/2014	7/16/2014	9/1/2014
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No. 15 - 15-077-22060-01-00
Spot Description:
SW SW SE SE Sec. 36 Twp. 33 S. R. 5 ☐ East ☑ West
200 Feet from ☐ North / ☑ South Line of Section
1145 Feet from ☑ East / ☐ West Line of Section

Footages Calculated from Nearest Outside Section Corner:
☐ NE ☐ NW ☑ SE ☐ SW

GPS Location: Lat: *(e.g. xx.xxxxx)* , Long: *(e.g. -xxx.xxxxx)*
Datum: ☐ NAD27 ☐ NAD83 ☐ WGS84
County: Harper
Lease Name: Joseph 3405 Well #: 2-1H
Field Name:
Producing Formation: Mississippian
Elevation: Ground: 1255 Kelly Bushing: 1276
Total Vertical Depth: 9170 Plug Back Total Depth:
Amount of Surface Pipe Set and Cemented at: 500 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: 40000 ppm Fluid volume: 1540 bbls
Dewatering method used: Hauled to Disposal

Location of fluid disposal if hauled offsite:

Operator Name: SandRidge Expl. and Prod., LLC
Lease Name: Rose 3408 2-31H License #: 34192
Quarter SE Sec. 31 Twp. 34 S. R. 8 ☐ East ☑ West
County: Harper, KS Permit #: 15-077-22056-01-00

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: 10/14/2014
☑ **Confidential Release Date:** 10/13/2016
☑ **Wireline Log Received**
☐ **Geologist Report Received**
☐ **UIC Distribution**
ALT ☑ **I** ☐ **II** ☐ **III** **Approved by:** NAOMI JAMES **Date:** 10/14/2014

1225704

Operator Name: SandRidge Exploration and Production LLC Lease Name: Joseph 3405 Well #: 2-1H

Sec. 36 Twp. 33 S. R. 5 ☐ East ☑ West County: Harper

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 ☐ Yes ☑ No
(Attach Additional Sheets)

Samples Sent to Geological Survey ☐ Yes ☑ No

Cores Taken ☐ Yes ☑ No

Electric Log Run ☑ Yes ☐ No

List All E. Logs Run:

Array Induction Gamma Ray Memory Log
Spectral Density/ Dual Spaced Neutron Gamma Ray Memory Log

☐ Log Formation (Top), Depth and Datum ☐ Sample

Name	Top	Datum
Base Heebner	3131	
Lansing	3488	
Cottage Grove	3822	
Oswego	4217	
Cherokee	4362	
Verdigris	4385	
Miss Unconformity	4682	

CASING RECORD ☑ New ☐ 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
Conductor	30	20	75	80	Edge Services 10 Sack Grout	8	none
Surface	12.25	9.63	36	500	Premium Plus (Class C)	365	2% Calcium Chloride, 1/4 pps Cello-Flak
Intermediate	8.75	7	26	5375	50:50 Poz Premium, Premium,	950	4% Gel, .2% FL-17, .1% C-51, .2% C-20,

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	-			
	-			

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 *(Amount and Kind of Material Used)*	Depth

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

Date of First, Resumed Production, SWD or ENHR. 9/4/2014

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:
☐ Vented ☐ Sold ☐ Used on Lease
(If vented, Submit ACO-18.)

METHOD OF COMPLETION:
☐ Open Hole ☐ Perf. ☐ Dually Comp. *(Submit ACO-5)* ☐ Commingled *(Submit ACO-4)*
☐ Other *(Specify)*

PRODUCTION INTERVAL:

Form	ACO1 - Well Completion
Operator	SandRidge Exploration and Production LLC
Well Name	Joseph 3405 2-1H
Doc ID	1225704

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	30	20	75	80	Edge Services 10 Sack Grout	8	none
Surface	12.25	9.63	36	500	Premium Plus (Class C)	365	2% Calcium Chloride, 1/4 pps Cello-Flake
Intermediate	8.75	7	26	5375	50:50 Poz Premium, Premium, Premium Plus (Class C)	950	4% Gel, .2% FL-17, .1% C-51, .2% C-20, .1% C-37, .4% C-41P

EDGE SERVICES
580-254-3216
Woodward, OK

INVOICE

DATE	INVOICE #
6/19/2014	4873

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	6/18/2014	3687	LARIAT 45	JOSEPH 3405 2-1H	Due on rec...

Description
DRILLED 80' OF 30" CONDUCTOR HOLE DRILLED 6' OF 76" HOLE FURNISHED AND SET 6' X 6' TINHORN CELLAR FURNISHED 80' OF 20" CONDUCTOR PIPE FURNISHED WELDER AND MATERIALS FURNISHED 8 YARDS OF 10 SACK GROUT FOR CONDUCTOR HOLE FURNISHED 4 YARDS OF 10 SACK GROUT FOR MOUSE HOLE DRILL MOUSE HOLE FURNISHED 80' OF 16" CONDUCTOR PIPE TOTAL BID $17,000.00

Sales Tax (6.15%)	$158.79
TOTAL	$17,158.79

JOB SUMMARY

PROJECT NUMBER	TICKET DATE
SOK 3870	06/23/14

COUNTY	State	COMPANY	CUSTOMER REP
Harper	Kansas	dridge Exploration & Produc	Claude Hallmark

LEASE NAME	Well No.	JOB TYPE	EMPLOYEE NAME
Joseph	3405 2-1H	Surface	ROBERT BURRIS

EMP NAME							
Robert Burris		RJ STONEHOCKER					
CODY BONITZ							
Vontray Watkins							
Randall Irvin							

Form. Name _____ Type: _____

Packer Type _____ Set At 0

Bottom Hole Temp. 80 Pressure _____

Retainer Depth _____ Total Depth 517

	Called Out	On Location	Job Started	Job Completed
Date	6/22/2014	6/22/2014	6/23/014	6/23/2014
Time	16:30	18:45	24:00	12:30

Tools and Accessories

Type and Size	Qty	Make
Auto Fill Tube	0	IR
Insert Float Va	0	IR
Centralizers	0	IR
Top Plug	0	IR
HEAD	0	IR
Limit clamp	0	IR
Weld-A	0	IR
Texas Pattern Guide Shoe	0	IR
Cement Basket	0	IR

Well Data

	New/Used	Weight	Size Grade	From	To	Max. Allow
Casing		36#	9⅝"	Surface	523	1,500
Liner						
Liner						
Tubing			0			
Drill Pipe						
Open Hole			12¼"	Surface	517	Shots/Ft.
Perforations						
Perforations						
Perforations						

Materials

Mud Type	WBM	Density 9	Lb/Gal	
Disp. Fluid	Fresh Water	Density 8.33	Lb/Gal	
Spacer type	Fresh Wate	BBL. 10		8.33
Spacer type		BBL.		
Acid Type		Gal.	%	
Acid Type		Gal.	%	
Surfactant		Gal.	In	
NE Agent		Gal.	In	
Fluid Loss		Gal/Lb	In	
Gelling Agent		Gal/Lb	In	
Fric. Red.		Gal/Lb	In	
MISC.		Gal/Lb	In	

Perfpac Balls _____ Qty. _____

Other _____

Other _____

Other _____

Other _____

Other _____

Hours On Location

Date	Hours
6/22	5.0
6/23	12.0
Total	17.0

Operating Hours

Date	Hours
6/23	1.5
Total	1.5

Description of Job

Surface

Pressures

MAX 2000 PSI AVG. 900 PSI

Average Rates in BPM

MAX 6 BPM AVG 2 BPM

Cement Left in Pipe

Feet 48 FT Reason SHOE JOINT

Cement Data

Stage	Sacks	Cement	Additives	W/Rq.	Yield	Lbs/Gal
1	0	0	0	0.00	0.00	0.00
2	195	Premium Plus (Class C)	2% Calcium Chloride - ¼pps Cello-Flake	6.32	1.32	14.80
3	170	Premium Plus (Class C)	*2% Calcium Chloride on side to use if necessary	*6.32	*1.32	*14.8

Summary

Preflush		Type:		Preflush:	BBl	10.00	Type: Fresh Water
Breakdown		MAXIMUM	1,500 PSI	Load & Bkdn:	Gal - BBl	N/A	Pad:Bbl -Gal N/A
		Lost Returns-N	NO/FULL	Excess /Return	BBl	13	Calc.Disp Bbl 37
		Actual TOC	SURFACE	Calc. TOC:		SURFACE	Actual Disp. 36.00
Average		Bump Plug PSI:	1,800	Final Circ.	PSI:	1,300	Disp:Bbl
ISIP	5 Min.	10 Min	15 Min	Cement Slurry	BBl	87.0	
				Total Volume	BBl	133.00	

CUSTOMER REPRESENTATIVE Claude Hallmark

SIGNATURE

JOB SUMMARY

PROJECT NUMBER	TICKET DATE
SOK 3902	07/04/14

COUNTY	State	COMPANY	CUSTOMER REP
Harper	Kansas	Sandridge Exploration & Production	Bill Torbett

LEASE NAME	Well No.	JOB TYPE	EMPLOYEE NAME
Joseph 3405	2-1H	Intermediate	Arthur Setzar

EMP NAME

Arthur Setzer		Eric Parsons					
Jared Green							
Donald Brown							
David Settlemier							

Form. Name _____ Type: _____

Packer Type _____ Set At 0

Bottom Hole Temp. 155 Pressure _____

Retainer Depth _____ Total Depth 5375

	Called Out	On Location	Job Started	Job Completed
Date	7/3/2014	7/3/2014	7/3/2014	7/4/2014
Time	0100	8:00am	12:07pm	0400

Tools and Accessories

Type and Size	Qty	Make
Auto Fill Tube	0	IR
Insert Float Va	0	IR
Centralizers	0	IR
Top Plug	0	IR
HEAD	0	IR
Limit clamp	0	IR
Weld-A	0	IR
Texas Pattern Guide Shoe	0	IR
Cement Basket	0	IR

Well Data

	New/Used	Weight	Size Grade	From	To	Max. Allow
Casing		26#	7"	Surface	5,375	5,000
Liner						
D V Tool @					604	
Tubing			0			
Drill Pipe						
Open Hole			8¾"	Surface	5,369	Shots/Ft.
Perforations						
Perforations						
Perforations						

Materials

Mud Type	WBM	Density 9		Lb/Gal
Disp. Fluid	Fresh Water	Density 8.33		Lb/Gal
Spacer type	Fresh Wate	BBL. 20		8.33
Spacer type		BBL.		
Acid Type		Gal.	%	
Acid Type		Gal.	%	
Surfactant		Gal.	In	
NE Agent		Gal.	In	
Fluid Loss		Gal/Lb	In	
Gelling Agent		Gal/Lb	In	
Fric. Red.		Gal/Lb	In	
MISC.		Gal/Lb	In	

Perfpac Balls _____ Qty. _____

Other _____

Other _____

Other _____

Other _____

Other _____

Hours On Location

Date	Hours
7/3	16.0
7/4	4.0
Total	20.0

Operating Hours

Date	Hours
7/3	5.0
7/4	4.0
Total	9.0

Description of Job

Intermediate

D V Tool @ 604'

1st Stage Displ. 204

2nd Stage Displ. 23

Pressures

MAX 5. 000 PSI AVG. 100

Average Rates in BPM

MAX 8 BPM AVG 4

Cement Left in Pipe

Feet 44 Reason SHOE JOINT

Cement Data

Stage	Sacks	Cement	Additives	W/Rq.	Yield	Lbs/Gal
1	250	50/50 POZ PREMIUM	4% Gel - 0.2% FL-17 - 0.1% C-51 - 0.2% C-20 - 0.1% C-37 - 0.4% C-41P	6.93	1.43	13.60
2	100	Premium	0.2% FL-17 - 0.1% C-51 - 0.1% C-20 - 0.4% C-41P	5.19	1.19	15.60
3	600	Premium Plus (Class C)	2% Calcium Chloride	6.32	1.32	14.80

Summary

Preflush _____ Type: _____

Breakdown _____ MAXIMUM 5,000 PSI

_____ Lost Returns-I NO/FULL

_____ Actual TOC _____

Average _____ Bump Plug PSI: 620

ISIP _____ 5 Min. _____ 10 Min _____ 15 Min _____

Preflush:	BBl	30.00	Type: Gel Spacer
Load & Bkdn:	Gal - BBl	N/A	Pad:Bbl -Gal N/A
Excess /Return	BBl	N/A	Calc.Disp Bbl 204 / 23
Calc. TOC:		5,000	Actual Disp.
Final Circ.	PSI:	160	Disp:Bbl
Cement Slurry	BBl	109.0	
Total Volume	BBl	138.97	

CUSTOMER REPRESENTATIVE Bill Torbett

SIGNATURE

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	5204	5464	4210	1090
BHL	9170	90.03	358.52	4450.11	4293.66	1612.19	4585.26	6.33	681	4615	4576	680
Miss Entry	4682	48.29	48.08	4314.20	-154.07	1570.85	374.46	2.86	5128	168	4477	761
Top Perf	0	50.83	388.58	4477.55	-4872.40	1827.37	-3993.10	259.05	9850	-4555	4672	546
Bottom Perf	0	90.03	358.52	4454.91	-4873.28	1849.03	-3986.76	172.08	9851	-4556	4694	524

Survey Points		X	Y		X	Y		m
	NW Corner XY Coord	2198074	173029				North Line slope	-0.0035211
	SW Corner XY Coord	2198444	162269	Surface XY	2202463	167810	East Line slope	-0.0158805
	NE Corner XY Coord	2203470	173010				South Line slope	0.0190568
	SE Corner XY Coord	2203639	162368				West Line slope	-0.0343866

	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
	0	0.0	0	0	0	0	0	0	5204	5464	4210	1090
	957	0.40	242.00	956.99	-1.57	-2.95	2.99	0.04	5205	5463	4207	1093
	1048	3.20	231.10	1047.94	-3.31	-5.21	5.71	3.09	5207	5461	4204	1095
	1140	6.00	212.40	1139.64	-8.98	-9.78	12.99	3.41	5213	5456	4199	1100
	1231	5.80	205.30	1230.16	-17.16	-14.29	22.26	0.83	5221	5448	4195	1104
	1322	12.60	199.20	1319.94	-30.70	-19.53	36.34	7.54	5234	5434	4189	1110
	1414	17.70	199.90	1408.71	-53.34	-27.59	59.47	5.55	5257	5412	4180	1118
	1505	21.70	201.00	1494.37	-82.07	-38.33	89.10	4.42	5286	5383	4168	1129
	1597	21.10	199.10	1580.02	-113.59	-49.85	121.47	1.00	5317	5352	4156	1141
	1688	23.70	197.80	1664.15	-146.49	-60.80	154.63	2.91	5350	5319	4144	1153
	1779	22.80	197.20	1747.76	-180.74	-71.60	188.82	1.02	5385	5285	4132	1164
	1870	22.00	198.50	1831.89	-213.75	-82.22	221.88	1.03	5418	5252	4120	1175
	1961	22.50	198.80	1916.12	-246.40	-93.24	254.87	0.56	5450	5220	4108	1187
	2053	20.60	193.70	2001.69	-278.79	-102.75	286.79	2.90	5483	5188	4097	1197
	2144	21.10	201.60	2086.75	-309.58	-112.57	317.57	3.14	5514	5157	4086	1207
	2235	21.20	201.60	2171.62	-340.11	-124.66	349.46	0.11	5544	5127	4073	1220
	2326	24.90	201.50	2255.34	-373.24	-137.74	384.05	4.07	5577	5094	4059	1233
	2418	25.60	200.80	2338.55	-409.84	-151.89	422.08	0.83	5614	5057	4044	1248
	2509	24.00	198.90	2421.15	-445.73	-164.87	458.85	1.97	5650	5022	4029	1262
	2600	23.60	200.00	2504.42	-480.35	-177.09	494.16	0.66	5685	4987	4016	1274
	2692	23.20	199.70	2588.85	-514.72	-189.50	529.36	0.45	5719	4953	4002	1287
	2783	22.70	198.60	2672.65	-548.24	-201.14	563.43	0.72	5752	4920	3990	1299
	2875	21.40	196.20	2757.92	-581.18	-211.49	596.28	1.72	5785	4887	3978	1310
	2966	23.10	201.00	2842.14	-613.79	-222.52	629.25	2.73	5818	4855	3966	1322
	3057	24.60	200.40	2925.37	-648.21	-235.52	664.84	1.67	5853	4821	3952	1335
	3149	24.20	199.20	3009.15	-683.97	-248.39	701.44	0.69	5888	4785	3938	1349
	3240	23.50	198.90	3092.38	-718.74	-260.40	736.75	0.78	5923	4751	3924	1361
	3332	21.90	202.30	3177.26	-751.98	-272.85	771.05	2.25	5956	4718	3911	1374
	3425	19.80	202.40	3264.16	-782.59	-285.44	803.30	2.26	5987	4687	3897	1387
	3516	21.80	202.30	3349.23	-812.47	-297.72	834.77	2.20	6017	4658	3884	1400
	3607	24.20	202.00	3432.99	-845.40	-311.12	869.38	2.64	6050	4625	3869	1414
	3699	23.30	199.20	3517.20	-880.07	-324.17	905.20	1.57	6085	4591	3855	1428
	3790	22.00	201.70	3601.18	-912.90	-336.39	939.04	1.78	6118	4558	3842	1440
	3881	24.90	201.90	3684.66	-946.52	-349.84	974.24	3.19	6151	4525	3827	1454
	3973	25.90	203.00	3767.76	-982.99	-364.91	1012.70	1.20	6188	4488	3811	1470
	4064	24.50	199.80	3850.10	-1019.04	-379.07	1050.28	2.15	6224	4453	3795	1485
	4094	24.30	197.60	3877.42	-1030.77	-383.04	1062.15	3.10	6236	4441	3791	1489
	4125	23.70	197.30	3905.74	-1042.80	-386.82	1074.15	1.98	6248	4429	3787	1493
	4155	22.90	197.90	3933.30	-1054.11	-390.41	1085.44	2.78	6259	4418	3783	1497
	4186	23.80	198.60	3961.76	-1065.78	-394.26	1097.18	3.04	6271	4406	3779	1501
	4216	25.70	198.80	3989.00	-1077.67	-398.28	1109.21	6.34	6283	4394	3774	1505
	4247	27.60	199.60	4016.71	-1090.80	-402.86	1122.56	6.24	6296	4381	3769	1510
	4277	29.50	199.30	4043.06	-1104.32	-407.63	1136.35	6.35	6309	4368	3764	1515
	4307	32.00	200.30	4068.84	-1118.75	-412.83	1151.12	8.51	6324	4354	3758	1520
	4338	33.80	200.30	4094.86	-1134.54	-418.67	1167.38	5.81	6340	4338	3752	1526
	4368	35.50	199.80	4119.54	-1150.56	-424.52	1183.82	5.75	6356	4322	3745	1532
	4399	37.70	200.80	4144.43	-1167.89	-430.93	1201.67	7.35	6373	4305	3738	1539
	4429	40.10	201.90	4167.77	-1185.43	-437.79	1219.94	8.33	6391	4287	3731	1546
	4459	42.50	202.00	4190.31	-1203.79	-445.19	1239.20	8.00	6409	4269	3723	1554
	4490	44.50	201.20	4212.80	-1223.63	-453.04	1259.92	6.69	6429	4249	3714	1562
	4520	47.00	201.50	4233.73	-1243.65	-460.87	1280.76	8.37	6449	4230	3706	1570
	4551	50.00	201.60	4254.27	-1265.24	-469.39	1303.30	9.68	6470	4208	3697	1579
	4581	52.80	200.80	4272.98	-1287.09	-477.87	1326.03	9.56	6492	4186	3687	1588
	4612	55.80	200.30	4291.07	-1310.66	-486.70	1350.36	9.77	6516	4163	3678	1597
	4642	59.20	200.70	4307.19	-1334.36	-495.56	1374.80	11.39	6540	4139	3668	1606
	4673	62.90	201.50	4322.19	-1359.66	-505.32	1401.09	12.15	6565	4114	3657	1616
	4703	66.60	201.20	4334.98	-1384.92	-515.20	1427.40	12.37	6590	4089	3647	1627
	4733	70.40	200.70	4345.98	-1410.99	-525.17	1454.43	12.76	6616	4063	3636	1637
	4764	73.80	200.50	4355.50	-1438.59	-535.55	1482.94	10.99	6644	4036	3625	1648
	4794	76.60	200.20	4363.17	-1465.78	-545.64	1510.95	9.38	6671	4009	3613	1658
	4825	79.50	199.50	4369.58	-1494.31	-555.93	1540.16	9.61	6700	3981	3602	1669
	4855	81.90	198.70	4374.43	-1522.28	-565.62	1568.58	8.42	6728	3953	3592	1679
	4886	83.50	197.20	4378.37	-1551.53	-575.09	1597.91	7.05	6757	3924	3581	1689
	4916	83.80	196.40	4381.69	-1580.07	-583.71	1626.17	2.83	6786	3895	3571	1698
	4947	84.10	196.10	4384.96	-1609.67	-592.33	1655.29	1.37	6815	3866	3562	1707
Top of Tangent	4977	84.60	196.00	4387.91	-1638.36	-600.58	1683.46	1.70	6844	3838	3553	1716

	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
@ 5069'	5069	87.10	198.20	4394.57	-1726.04	-627.56	1770.57	3.62	6932	3750	3523	1745
	5160	87.10	200.20	4399.17	-1811.87	-657.45	1857.84	2.20	7018	3665	3490	1776
7" Shoe @ 5373	5251	90.10	200.20	4401.40	-1897.23	-688.86	1945.62	3.30	7103	3580	3455	1809
	5319	91.30	200.80	4400.57	-1960.92	-712.67	2011.33	1.97	7167	3517	3429	1833
Btm of Tangent	5439	92.20	202.20	4396.90	-2072.51	-756.62	2127.76	1.39	7279	3406	3382	1879
@ 5439'	5534	88.50	202.40	4396.32	-2160.39	-792.66	2220.28	3.90	7367	3319	3343	1917
	5629	88.30	202.50	4398.97	-2248.16	-828.93	2312.83	0.24	7455	3232	3303	1954
	5724	87.80	202.70	4402.21	-2335.81	-865.41	2405.41	0.57	7542	3145	3264	1992
	5819	88.90	201.10	4404.94	-2423.91	-900.83	2497.75	2.04	7631	3058	3225	2029
	5911	86.00	201.10	4409.03	-2509.65	-933.91	2586.80	3.15	7716	2973	3189	2063
	6002	85.10	201.40	4416.09	-2594.20	-966.79	2674.78	1.04	7801	2889	3154	2098
	6033	87.40	202.40	4418.12	-2622.90	-978.33	2704.85	8.09	7830	2860	3141	2110
	6063	87.80	201.70	4419.38	-2650.68	-989.58	2734.02	2.69	7858	2833	3129	2121
	6094	88.60	202.00	4420.35	-2679.44	-1001.11	2764.14	2.76	7887	2804	3116	2133
	6125	92.00	202.20	4420.19	-2708.15	-1012.77	2794.30	10.99	7915	2776	3104	2145
	6155	93.20	203.00	4418.83	-2735.82	-1024.29	2823.53	4.81	7943	2748	3091	2157
	6186	92.40	202.50	4417.31	-2764.37	-1036.26	2853.74	3.04	7972	2720	3078	2170
	6346	89.90	203.40	4414.10	-2911.66	-1098.63	3009.93	1.66	8119	2574	3011	2234
	6438	90.60	201.70	4413.70	-2996.63	-1133.91	3099.63	2.00	8204	2489	2973	2271
	6529	89.90	200.60	4413.31	-3081.49	-1166.74	3187.83	1.43	8289	2405	2937	2305
	6621	91.00	200.00	4412.58	-3167.77	-1198.66	3276.65	1.36	8376	2319	2902	2339
	6713	89.20	200.50	4412.42	-3254.08	-1230.50	3365.45	2.03	8462	2234	2867	2372
	6804	89.00	200.00	4413.85	-3339.44	-1261.99	3453.28	0.59	8547	2149	2833	2405
	6896	91.40	201.70	4413.53	-3425.41	-1294.73	3542.32	3.20	8634	2064	2797	2439
	6988	91.70	203.20	4411.04	-3510.40	-1329.84	3631.95	1.66	8719	1979	2759	2475
	7080	88.40	206.00	4410.96	-3594.03	-1368.13	3722.30	4.70	8802	1896	2718	2515
	7171	88.10	207.40	4413.74	-3675.29	-1409.00	3812.21	1.57	8884	1816	2674	2557
	7262	89.80	208.60	4415.41	-3755.62	-1451.71	3902.43	2.29	8964	1736	2629	2601
	7354	89.90	210.60	4415.65	-3835.60	-1497.15	3993.95	2.18	9044	1657	2580	2648
	7445	90.30	212.40	4415.49	-3913.19	-1544.69	4084.74	2.03	9122	1581	2530	2696
	7537	90.60	215.80	4414.77	-3989.36	-1596.26	4176.70	3.71	9199	1505	2476	2749
	7632	88.90	217.80	4415.18	-4065.42	-1653.16	4271.66	2.76	9275	1430	2417	2807
	7726	90.50	218.40	4415.67	-4139.39	-1711.16	4365.55	1.82	9349	1358	2356	2866
	7821	91.70	220.50	4413.85	-4212.72	-1771.51	4460.28	2.55	9423	1285	2293	2928
	7915	91.00	223.90	4411.63	-4282.33	-1834.62	4553.58	3.69	9492	1217	2228	2992
	8010	90.40	225.30	4410.47	-4349.96	-1901.32	4647.34	1.60	9560	1151	2159	3060
	8104	91.00	226.80	4409.33	-4415.19	-1968.98	4739.71	1.72	9626	1087	2089	3129
	8198	90.30	227.40	4408.26	-4479.17	-2037.84	4831.74	0.98	9690	1024	2018	3199
	8293	90.30	228.60	4407.76	-4542.74	-2108.43	4924.45	1.26	9754	962	1945	3270
	8387	89.90	229.90	4407.60	-4604.10	-2179.64	5015.71	1.45	9815	902	1872	3342
	8482	90.10	232.00	4407.60	-4663.94	-2253.41	5107.22	2.22	9875	843	1796	3417
	8577	88.30	234.40	4408.92	-4720.84	-2329.47	5197.65	3.16	9933	788	1718	3494
	8672	89.00	237.00	4411.16	-4774.35	-2407.91	5286.71	2.83	9986	736	1637	3573
	8766	90.00	240.70	4411.98	-4822.96	-2488.34	5372.91	4.08	10035	689	1555	3655
	8861	91.40	242.50	4410.82	-4868.14	-2571.90	5458.13	2.40	10081	645	1470	3739
	8956	91.30	244.30	4408.58	-4910.66	-2656.81	5541.98	1.90	10124	604	1384	3824
	9051	90.80	245.60	4406.84	-4950.88	-2742.86	5624.59	1.47	10164	566	1296	3911
	9170	90.80	245.60	4405.18	-5000.03	-2851.22	5727.42	0.00	10214	519	1186	4020
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STAGE 1 - Lat #2								
Port @ 9,109 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Type	Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	18800	448					4.5
Slickwater	100	12800	305	40/70	Garnet	0.25	3200	3.0
Slickwater	100	6000	143					1.4
Slickwater	100	12800	305	40/70	White	0.50	6400	3.0
Slickwater	100	6000	143					1.4
Slickwater	100	12800	305	40/70	White	0.75	9600	3.0
Slickwater	100	6000	143					1.4
Slickwater	100	6400	152	40/70	White	1.00	6400	1.5
Slickwater	100	6000	143					1.4
Slickwater	100	6400	152	40/70	Garnet	1.00	6400	1.5
Slickwater	100	8030	191					1.9
TOTAL		102,780	2,447				32,000	25.2

Frac the MISSISSIPPI (Stage 2) as follows:

Drop 2.125" ball. Reduce rate to 5-10bpm as +/- 88 bbls (50 bbls before ball seats).

STAGE 2 - Lat #2								
Port @ 8,967 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Type	Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	17260	411					4.1
Slickwater	100	11360	270	40/70	Garnet	0.25	2840	2.7
Slickwater	100	5900	140					1.4
Slickwater	100	11360	270	40/70	White	0.50	5680	2.7
Slickwater	100	5900	140					1.4
Slickwater	100	11360	270	40/70	White	0.75	8520	2.7
Slickwater	100	5900	140					1.4
Slickwater	100	5680	135	40/70	White	1.00	5680	1.4
Slickwater	100	5900	140					1.4
Slickwater	100	5680	135	40/70	Garnet	1.00	5680	1.4
Slickwater	100	7938	189					1.9
TOTAL		94,988	2,262				28,400	23.3

Frac the MISSISSIPPI (Stage 3) as follows:

Drop 2.188" ball. Reduce rate to 5-10bpm as +/- 86 bbls (50 bbls before ball seats).

NOTE: Pump FR as required to obtain minimum rate of 70 bpm. DO NOT EXCEED 0.75 gal/1000 concentration of FR without prior discussion with engineer.

STAGE 3 - Lat #2								
Port @ 8,824 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Type	Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	17560	418					4.2
Slickwater	100	11760	280	40/70	Garnet	0.25	2940	2.8
Slickwater	100	5800	138					
Slickwater	100	11760	280	40/70	White	0.50	5880	2.8
Slickwater	100	5800	138					
Slickwater	100	11760	280	40/70	White	0.75	8820	2.8
Slickwater	100	5800	138					
Slickwater	100	5880	140	40/70	White	1.00	5880	1.4
Slickwater	100	5800	138					
Slickwater	100	5880	140	40/70	Garnet	1.00	5880	1.4
Slickwater	100	7844	187					1.9
TOTAL		96,394	2,295				29,400	18.1

Frac the MISSISSIPPI (Stage 4) as follows:

Drop 2.250" ball. Reduce rate to 5-10bpm as +/- 84 bbls (50 bbls before ball seats).

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 4 - Lat #2								
Port @ 8,677 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Type	Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	16740	399					4.0
Slickwater	100	11040	263	40/70	Garnet	0.25	2760	2.6
Slickwater	100	5700	136					1.4
Slickwater	100	11040	263	40/70	White	0.50	5520	2.6
Slickwater	100	5700	136					1.4
Slickwater	100	11040	263	40/70	White	0.75	8280	2.6
Slickwater	100	5700	136					1.4
Slickwater	100	5520	131	40/70	White	1.00	5520	1.3
Slickwater	100	5700	136					1.4
Slickwater	100	5520	131	40/70	Garnet	1.00	5520	1.3
Slickwater	100	7749	184					1.8
TOTAL		92,199	2,195				27,600	22.7

Frac the MISSISSIPPI (Stage 5) as follows:

Drop 2.313" ball. Reduce rate to 5-10bpm as +/- 82 bbls (50 bbls before ball seats).

STAGE 5 - Lat #2								
Port @ 8,539 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Type	Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	16960	404					4.0
Slickwater	100	11360	270	40/70	Garnet	0.25	2840	2.7
Slickwater	100	5600	133					1.3
Slickwater	100	11360	270	40/70	White	0.50	5680	2.7
Slickwater	100	5600	133					1.3
Slickwater	100	11360	270	40/70	White	0.75	8520	2.7
Slickwater	100	5600	133					1.3
Slickwater	100	5680	135	40/70	White	1.00	5680	1.4
Slickwater	100	5600	133					1.3
Slickwater	100	5680	135	40/70	Garnet	1.00	5680	1.4
Slickwater	100	7659	182					1.8
TOTAL		93,209	2,219				28,400	22.9

Frac the MISSISSIPPI (Stage 6) as follows:
Drop 2.375" ball. Reduce rate to 5-10bpm as +/- 80 bbls (50 bbls before ball seats).

STAGE 6 - Lat #2								
Port @ 8,396 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop	Prop Type	Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	16940	403					4.0
Slickwater	100	11440	272	40/70	Garnet	0.25	2860	2.7
Slickwater	100	5500	131					
Slickwater	100	11440	272	40/70	White	0.50	5720	2.7
Slickwater	100	5500	131					
Slickwater	100	11440	272	40/70	White	0.75	8580	2.7
Slickwater	100	5500	131					
Slickwater	100	5720	136	40/70	White	1.00	5720	1.4
Slickwater	100	5500	131					
Slickwater	100	5720	136	40/70	Garnet	1.00	5720	1.4
Slickwater	100	7566	180					1.8
TOTAL		93,016	2,215				28,600	17.6

Frac the MISSISSIPPI (Stage 7) as follows:
Drop 2.438" ball. Reduce rate to 5-10bpm as +/- 78 bbls (50 bbls before ball seats).

STAGE 7 - Lat #2								
Port @ 8,260 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	16760	399					4.0
Slickwater	100	11360	270	40/70	Garnet	0.25	2840	2.7
Slickwater	100	5400	129					1.3
Slickwater	100	11360	270	40/70	White	0.50	5680	2.7
Slickwater	100	5400	129					1.3
Slickwater	100	11360	270	40/70	White	0.75	8520	2.7
Slickwater	100	5400	129					1.3
Slickwater	100	5680	135	40/70	White	1.00	5680	1.4
Slickwater	100	5400	129					1.3
Slickwater	100	5680	135	40/70	Garnet	1.00	5680	1.4
Slickwater	100	7477	178					1.8
TOTAL		92,027	2,191				28,400	22.6

Frac the MISSISSIPPI (Stage 8) as follows:
Drop 2.500" ball. Reduce rate to 5-10bpm as +/- 75 bbls (50 bbls before ball seats).

STAGE 8 - Lat #2								
Port @ 8,114 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	16580	395					3.9
Slickwater	100	11280	269	40/70	Garnet	0.25	2820	2.7
Slickwater	100	5300	126					1.3
Slickwater	100	11280	269	40/70	White	0.50	5640	2.7
Slickwater	100	5300	126					1.3
Slickwater	100	11280	269	40/70	White	0.75	8460	2.7
Slickwater	100	5300	126					1.3
Slickwater	100	5640	134	40/70	White	1.00	5640	1.3
Slickwater	100	5300	126					1.3
Slickwater	100	5640	134	40/70	Garnet	1.00	5640	1.3
Slickwater	100	7382	176					1.8
TOTAL		91,032	2,167				28,200	22.4

Frac the MISSISSIPPI (Stage 9) as follows:
Drop 2.563" ball. Reduce rate to 5-10bpm as +/- 73 bbls (50 bbls before ball seats).

STAGE 9 - Lat #2								
Port @ 7,972 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	16880	402					4.0
Slickwater	100	11680	278	40/70	Garnet	0.25	2920	2.8
Slickwater	100	5200	124					1.2
Slickwater	100	11680	278	40/70	White	0.50	5840	2.8
Slickwater	100	5200	124					1.2
Slickwater	100	11680	278	40/70	White	0.75	8760	2.8
Slickwater	100	5200	124					1.2
Slickwater	100	5840	139	40/70	White	1.00	5840	1.4
Slickwater	100	5200	124					1.2
Slickwater	100	5840	139	40/70	Garnet	1.00	5840	1.4
Slickwater	100	7290	174					1.7
TOTAL		92,440	2,201				29,200	22.7

Frac the MISSISSIPPI (Stage 10) as follows:
Drop 2.625" ball. Reduce rate to 5-10bpm as +/- 71 bbls (50 bbls before ball seats).

STAGE 10 - Lat #2								
Port @ 7,828 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	16620	396					4.0
Slickwater	100	11520	274	40/70	Garnet	0.25	2880	2.7
Slickwater	100	5100	121					1.2
Slickwater	100	11520	274	40/70	White	0.50	5760	2.7
Slickwater	100	5100	121					1.2
Slickwater	100	11520	274	40/70	White	0.75	8640	2.7
Slickwater	100	5100	121					1.2
Slickwater	100	5760	137	40/70	White	1.00	5760	1.4
Slickwater	100	5100	121					1.2
Slickwater	100	5760	137	40/70	Garnet	1.00	5760	1.4
Slickwater	100	7196	171					1.7
TOTAL		91,046	2,168				28,800	22.4

Frac the MISSISSIPPI (Stage 11) as follows:
Drop 2.688" ball. Reduce rate to 5-10bpm as +/- 69 bbls (50 bbls before ball seats).

STAGE 11 - Lat #2								
Port @ 7,681 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	16780	400					4.0
Slickwater	100	11680	278	40/70	Garnet	0.25	2920	2.8
Slickwater	100	5100	121					1.2
Slickwater	100	11680	278	40/70	White	0.50	5840	2.8
Slickwater	100	5100	121					1.2
Slickwater	100	11680	278	40/70	White	0.75	8760	2.8
Slickwater	100	5100	121					1.2
Slickwater	100	5840	139	40/70	White	1.00	5840	1.4
Slickwater	100	5100	121					1.2
Slickwater	100	5840	139	40/70	Garnet	1.00	5840	1.4
Slickwater	100	7100	169					1.7
TOTAL		91,750	2,185				29,200	22.6

Frac the MISSISSIPPI (Stage 12) as follows:
Drop 2.750" ball. Reduce rate to 5-10bpm as +/- 66 bbls (50 bbls before ball seats).

STAGE 12 - Lat #2								
Port @ 7,534 '								
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	16680	397					4.0
Slickwater	100	11680	278	40/70	Garnet	0.25	2920	2.8
Slickwater	100	5000	119					1.2
Slickwater	100	11680	278	40/70	White	0.50	5840	2.8
Slickwater	100	5000	119					1.2
Slickwater	100	11680	278	40/70	White	0.75	8760	2.8
Slickwater	100	5000	119					1.2
Slickwater	100	5840	139	40/70	White	1.00	5840	1.4
Slickwater	100	5000	119					1.2
Slickwater	100	5840	139	40/70	Garnet	1.00	5840	1.4
Slickwater	100	7005	167					1.7
TOTAL		91,155	2,170				29,200	22.4

Frac the MISSISSIPPI (Stage 13) as follows:
Drop 2.813" ball. Reduce rate to 5-10bpm as +/- 64 bbls (50 bbls before ball seats).

STAGE 13 - Lat #2								
			Port @	7,388 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	16740	399					4.0
Slickwater	100	11840	282	40/70	Garnet	0.25	2960	2.8
Slickwater	100	4900	117					1.2
Slickwater	100	11840	282	40/70	White	0.50	5920	2.8
Slickwater	100	4900	117					1.2
Slickwater	100	11840	282	40/70	White	0.75	8880	2.8
Slickwater	100	4900	117					1.2
Slickwater	100	5920	141	40/70	White	1.00	5920	1.4
Slickwater	100	4900	117					1.2
Slickwater	100	5920	141	40/70	Garnet	1.00	5920	1.4
Slickwater	100	6910	165					1.6
TOTAL		91,360	2,175				29,600	22.5

Frac the MISSISSIPPI (Stage 14) as follows:
Drop 2.875" ball. Reduce rate to 5-10bpm as +/- 62 bbls (50 bbls before ball seats).

STAGE 14 - Lat #2								
			Port @	7,245 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	12400	295					3.0
Slickwater	100	7600	181	40/70	Garnet	0.25	1900	1.8
Slickwater	100	4800	114					1.1
Slickwater	100	7600	181	40/70	White	0.50	3800	1.8
Slickwater	100	4800	114					1.1
Slickwater	100	7600	181	40/70	White	0.75	5700	1.8
Slickwater	100	4800	114					1.1
Slickwater	100	3800	90	40/70	White	1.00	3800	0.9
Slickwater	100	4800	114					1.1
Slickwater	100	3800	90	40/70	Garnet	1.00	3800	0.9
Slickwater	100	6816	162					1.6
TOTAL		69,566	1,656				19,000	17.3

Frac the MISSISSIPPI (Stage 15) as follows:
Drop 2.938" ball. Reduce rate to 5-10bpm as +/- 60 bbls (50 bbls before ball seats).

STAGE 15 - Lat #2								
			Port @	7,145 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	15980	380					3.8
Slickwater	100	11280	269	40/70	Garnet	0.25	2820	2.7
Slickwater	100	4700	112					1.1
Slickwater	100	11280	269	40/70	White	0.50	5640	2.7
Slickwater	100	4700	112					1.1
Slickwater	100	11280	269	40/70	White	0.75	8460	2.7
Slickwater	100	4700	112					1.1
Slickwater	100	5640	134	40/70	White	1.00	5640	1.3
Slickwater	100	4700	112					1.1
Slickwater	100	5640	134	40/70	Garnet	1.00	5640	1.3
Slickwater	100	6751	161					1.6
TOTAL		87,401	2,081				28,200	21.5

Frac the MISSISSIPPI (Stage 16) as follows:
Drop 3.000" ball. Reduce rate to 5-10bpm as +/- 58 bbls (50 bbls before ball seats).

STAGE 16 - Lat #2								
			Port @	7,005 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	16120	384					3.8
Slickwater	100	11520	274	40/70	Garnet	0.25	2880	2.7
Slickwater	100	4600	110					1.1
Slickwater	100	11520	274	40/70	White	0.50	5760	2.7
Slickwater	100	4600	110					1.1
Slickwater	100	11520	274	40/70	White	0.75	8640	2.7
Slickwater	100	4600	110					1.1
Slickwater	100	5760	137	40/70	White	1.00	5760	1.4
Slickwater	100	4600	110					1.1
Slickwater	100	5760	137	40/70	Garnet	1.00	5760	1.4
Slickwater	100	6660	159					1.6
TOTAL		88,010	2,095				28,800	21.7

Frac the MISSISSIPPI (Stage 17) as follows:
Drop 3.063" ball. Reduce rate to 5-10bpm as +/- 56 bbls (50 bbls before ball seats).

STAGE 17 - Lat #2								
			Port @	6,863 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	15860	378					3.8
Slickwater	100	11360	270	40/70	Garnet	0.25	2840	2.7
Slickwater	100	4500	107					1.1
Slickwater	100	11360	270	40/70	White	0.50	5680	2.7
Slickwater	100	4500	107					1.1
Slickwater	100	11360	270	40/70	White	0.75	8520	2.7
Slickwater	100	4500	107					1.1
Slickwater	100	5680	135	40/70	White	1.00	5680	1.4
Slickwater	100	4500	107					1.1
Slickwater	100	5680	135	40/70	Garnet	1.00	5680	1.4
Slickwater	100	6568	156					1.6
TOTAL		85,868	2,044				28,400	20.4

Frac the MISSISSIPPI (Stage 18) as follows:
Drop 3.125" ball. Reduce rate to 5-10bpm as +/- 54 bbls (50 bbls before ball seats).

STAGE 18 - Lat #2								
			Port @	6,719 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	12400	295					3.0
Slickwater	100	8000	190	40/70	Garnet	0.25	2000	1.9
Slickwater	100	4400	105					1.0
Slickwater	100	8000	190	40/70	White	0.50	4000	1.9
Slickwater	100	4400	105					1.0
Slickwater	100	8000	190	40/70	White	0.75	6000	1.9
Slickwater	100	4400	105					1.0
Slickwater	100	4000	95	40/70	White	1.00	4000	1.0
Slickwater	100	4400	105					1.0
Slickwater	100	4000	95	40/70	Garnet	1.00	4000	1.0
Slickwater	100	6474	154					1.5
TOTAL		69,224	1,648				20,000	17.2

Frac the MISSISSIPPI (Stage 19) as follows:
Drop 3.188" ball. Reduce rate to 5-10bpm as +/- 52 bbls (50 bbls before ball seats).

STAGE 19 - Lat #2								
			Port @	6,620 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	15760	375					3.8
Slickwater	100	11360	270	40/70	Garnet	0.25	2840	2.7
Slickwater	100	4400	105					1.0
Slickwater	100	11360	270	40/70	White	0.50	5680	2.7
Slickwater	100	4400	105					1.0
Slickwater	100	11360	270	40/70	White	0.75	8520	2.7
Slickwater	100	4400	105					1.0
Slickwater	100	5680	135	40/70	White	1.00	5680	1.4
Slickwater	100	4400	105					1.0
Slickwater	100	5680	135	40/70	Garnet	1.00	5680	1.4
Slickwater	100	6410	153					1.5
TOTAL		85,960	2,047				28,400	21.2

Frac the MISSISSIPPI (Stage 20) as follows:
Drop 3.250" ball. Reduce rate to 5-10bpm as +/- 50 bbls (50 bbls before ball seats).

STAGE 20 - Lat #2								
			Port @	6,481 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	11820	281					2.8
Slickwater	100	7520	179	40/70	Garnet	0.25	1880	1.8
Slickwater	100	4300	102					1.0
Slickwater	100	7520	179	40/70	White	0.50	3760	1.8
Slickwater	100	4300	102					1.0
Slickwater	100	7520	179	40/70	White	0.75	5640	1.8
Slickwater	100	4300	102					1.0
Slickwater	100	3760	90	40/70	White	1.00	3760	0.9
Slickwater	100	4300	102					1.0
Slickwater	100	3760	90	40/70	Garnet	1.00	3760	0.9
Slickwater	100	6319	150					1.5
TOTAL		66,169	1,575				18,800	16.5

Frac the MISSISSIPPI (Stage 21) as follows:
Drop 3.313" ball. Reduce rate to 5-10bpm as +/- 47 bbls (50 bbls before ball seats).

STAGE 21 - Lat #2								
			Port @	6,292 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	23060	549					5.5
Slickwater	100	18960	451	40/70	Garnet	0.25	4740	4.5
Slickwater	100	4100	98					1.0
Slickwater	100	18960	451	40/70	White	0.50	9480	4.5
Slickwater	100	4100	98					1.0
Slickwater	100	18960	451	40/70	White	0.75	14220	4.5
Slickwater	100	4100	98					1.0
Slickwater	100	9480	226	40/70	White	1.00	9480	2.3
Slickwater	100	4100	98					1.0
Slickwater	100	9480	226	40/70	Garnet	1.00	9480	2.3
Slickwater	100	6196	148					1.5
TOTAL		122,246	2,911				47,400	29.8

Frac the MISSISSIPPI (Stage 22) as follows:
Drop 3.375" ball. Reduce rate to 5-10bpm as +/- 45 bbls (50 bbls before ball seats).

STAGE 22 - Lat #2								
			Port @	6,147 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	15540	370					3.7
Slickwater	100	11440	272	40/70	Garnet	0.25	2860	2.7
Slickwater	100	4100	98					1.0
Slickwater	100	11440	272	40/70	White	0.50	5720	2.7
Slickwater	100	4100	98					1.0
Slickwater	100	11440	272	40/70	White	0.75	8580	2.7
Slickwater	100	4100	98					1.0
Slickwater	100	5720	136	40/70	White	1.00	5720	1.4
Slickwater	100	4100	98					1.0
Slickwater	100	5720	136	40/70	Garnet	1.00	5720	1.4
Slickwater	100	6102	145					1.5
TOTAL		84,552	2,013				28,600	20.8

Frac the MISSISSIPPI (Stage 23) as follows:
Drop 3.438" ball. Reduce rate to 5-10bpm as +/- 43 bbls (50 bbls before ball seats).

STAGE 23 - Lat #2								
			Port @	6,005 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	11760	280					2.8
Slickwater	100	7760	185	40/70	Garnet	0.25	1940	1.8
Slickwater	100	4000	95					1.0
Slickwater	100	7760	185	40/70	White	0.50	3880	1.8
Slickwater	100	4000	95					1.0
Slickwater	100	7760	185	40/70	White	0.75	5820	1.8
Slickwater	100	4000	95					1.0
Slickwater	100	3880	92	40/70	White	1.00	3880	0.9
Slickwater	100	4000	95					1.0
Slickwater	100	3880	92	40/70	Garnet	1.00	3880	0.9
Slickwater	100	6009	143					1.4
TOTAL		65,559	1,561				19,400	16.3

Frac the MISSISSIPPI (Stage 24) as follows:
Drop 3.500" ball. Reduce rate to 5-10bpm as +/- 41 bbls (50 bbls before ball seats).

STAGE 24 - Lat #2								
			Port @	5,907 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	15260	363					3.6
Slickwater	100	11360	270	40/70	Garnet	0.25	2840	2.7
Slickwater	100	3900	93					0.9
Slickwater	100	11360	270	40/70	White	0.50	5680	2.7
Slickwater	100	3900	93					0.9
Slickwater	100	11360	270	40/70	White	0.75	8520	2.7
Slickwater	100	3900	93					0.9
Slickwater	100	5680	135	40/70	White	1.00	5680	1.4
Slickwater	100	3900	93					0.9
Slickwater	100	5680	135	40/70	Garnet	1.00	5680	1.4
Slickwater	100	5945	142					1.4
TOTAL		82,995	1,976				28,400	20.5

Frac the MISSISSIPPI (Stage 25) as follows:
Drop 3.563" ball. Reduce rate to 5-10bpm as +/- 39 bbls (50 bbls before ball seats).

STAGE 25 - Lat #2								
			Port @	5,765 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	15160	361					3.6
Slickwater	100	11360	270	40/70	Garnet	0.25	2840	2.7
Slickwater	100	3800	90					0.9
Slickwater	100	11360	270	40/70	White	0.50	5680	2.7
Slickwater	100	3800	90					0.9
Slickwater	100	11360	270	40/70	White	0.75	8520	2.7
Slickwater	100	3800	90					0.9
Slickwater	100	5680	135	40/70	White	1.00	5680	1.4
Slickwater	100	3800	90					0.9
Slickwater	100	5680	135	40/70	Garnet	1.00	5680	1.4
Slickwater	100	5853	139					1.4
TOTAL		82,403	1,962				28,400	20.3

Frac the MISSISSIPPI (Stage 26) as follows:
Drop 3.688" ball. Reduce rate to 5-10bpm as +/- 37 bbls (50 bbls before ball seats).

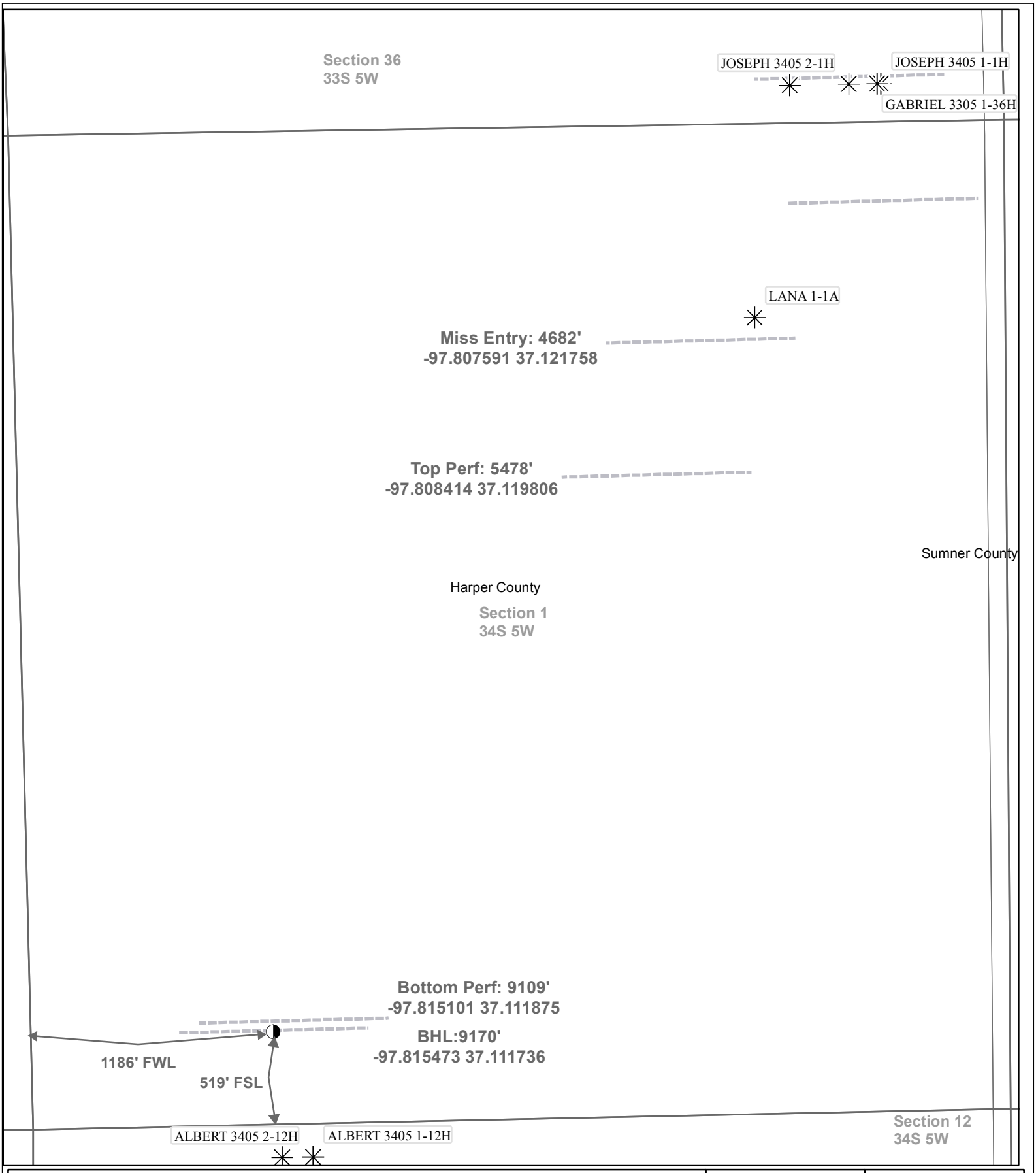
STAGE 26 - Lat #2								
			Port @	5,662 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	11700	279					2.8
Slickwater	100	8000	190	40/70	Garnet	0.25	2000	1.9
Slickwater	100	3700	88					0.9
Slickwater	100	8000	190	40/70	White	0.50	4000	1.9
Slickwater	100	3700	88					0.9
Slickwater	100	8000	190	40/70	White	0.75	6000	1.9
Slickwater	100	3700	88					0.9
Slickwater	100	4000	95	40/70	White	1.00	4000	1.0
Slickwater	100	3700	88					0.9
Slickwater	100	4000	95	40/70	Garnet	1.00	4000	1.0
Slickwater	100	5786	138					1.4
TOTAL		65,036	1,548				20,000	16.2

Frac the MISSISSIPPI (Stage 27) as follows:
Drop 3.750" ball. Reduce rate to 5-10bpm as +/- 34 bbls (50 bbls before ball seats).

STAGE 27 - Lat #2								
			Port @	5,478 '				
Fluid	Rate	Vol, gal	Vol, bbl	Prop		Prop Con	Prop, lbs	Time, min
15% HCl acid	20	750	18					0.9
Slickwater	100	18400	438					4.4
Slickwater	100	14800	352	40/70	Garnet	0.25	3700	3.5
Slickwater	100	3600	86					0.9
Slickwater	100	14800	352	40/70	White	0.50	7400	3.5
Slickwater	100	3600	86					0.9
Slickwater	100	14800	352	40/70	White	0.75	11100	3.5
Slickwater	100	3600	86					0.9
Slickwater	100	7400	176	40/70	White	1.00	7400	1.8
Slickwater	100	3600	86					0.9
Slickwater	100	7400	176	40/70	Garnet	1.00	7400	1.8
Slickwater	100	5666	135					1.3
TOTAL		98,416	2,343				37,000	24.1

	Fluid (bbls)	Total White Proppant (#)	Total Garnet (#)
Totals	31,808	530,460	227,340

7) Suck manifold and iron dry with vacuum truck. RDMO frac crew.



SANDRIDGE
THE POWER OF US

Actual BH Location

SandRidge Wells

Perf

Sections

Actual Bottom-Hole Location of Joseph 3405 2-1H
T&R: 34S 5W
Section: 1, 1186' FWL & 519' FSL
-97.815473 37.111736

1 in = 667 ft

0 500 1,000 2,000 Feet

N

Draftsman: Dory Deines	Draft Date: 10/3/2014
Drawing Name/Number: Addendum_Joseph 3405 2-1H.mxd	
Coordinate System: NAD 1927 State Plane Kansas South FIPS: 1502	

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/24/2014
Job End Date:	8/25/2014
State:	Kansas
County:	Harper
API Number:	15-077-22060-01-00
Operator Name:	SandRidge Energy
Well Name and Number:	Joseph 3405 2-1H
Longitude:	-97.80559874
Latitude:	37.12545923
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	4,405
Total Base Water Volume (gal):	2,424,954
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	93.24343	None
Sand (Proppant)	Archer	Proppant					
			Silica Substrate	NA	100.00000	3.34359	None
Hydrochloric Acid (15%)	Archer	Acidizing					
			Hydrochloric Acid	7647-01-0	15.00000	0.45231	None
			NONYL PHENOL, 4 MOL	104-40-5	10.00000	0.00439	None
C102	Bosque Disposal Systems, LLC	Oxidizer					
			Chlorine Dioxide	10049-04-4	15.00000	0.27346	
Chemflush	Archer	Enviro-Friendly Chemical Flush					
			Hydrotreated Petroleum Distillate	64742-47-8	99.00000	0.00381	None
			Alcohol Ethoxylate Surfactants	NA	10.00000	0.00038	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		0.03935	
			WATER	7732-18-5		0.02636	
			Aliphatic Hydrocarbon	64742-47-8		0.01967	
			Anionic Polymer	N/A		0.01967	

			TRADE SECRET	N/A		0.01758	
			Water	7732-18-5		0.00970	
			ISOPROPANOL	67-63-0		0.00439	
			METHANOL	67-56-1		0.00439	
			Oxyalkylated Alcohol	68002-97-1		0.00328	
			Polyol Ester	N/A		0.00328	
			Acrylic Polymer	28205-96-1		0.00162	
			Sodium Salt of Phosphate Ester	68131-72-6		0.00162	
			Polyglycol Ester	N/A		0.00066	
			Tetrasodium Ethylenediaminetetraacetate	64-02-8		0.00007	
			Acetic Acid	64-19-7			
			Cinnamic Aldehyde	104-55-2			
			n-olefins	N/A			
			Water	7732-18-5			
			Propargyl Alcohol	107-19-7			
			Buffer	N/A			
			Surfactant	N/A			
			Alcohol Ethoxylate Surfactants	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)