

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION 1235747
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: _____

1235747

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 <i>(Attach Additional Sheets)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Log	Formation (Top), Depth and Datum	<input type="checkbox"/> Sample
Samples Sent to Geological Survey	<input type="checkbox"/> Yes <input type="checkbox"/> No	Name	Top	Datum
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:				

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

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

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

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

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

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

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

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

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

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <i>(Submit ACO-4)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____	PRODUCTION INTERVAL: _____ _____
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MWD SURVEYS

Customer: Tapstone Energy
 Well: Mangen 36-34-10 #1H
 Field/Block: Mississippi Lime
 Co./Parish: Barber Co.
 State: KS

PGS Job #: LKS6115914
 MWD Operator: Ken Mitchell
 Directional Driller: Kyle Underwood
 Date of First Survey: December 5, 2014
 Date of Last Survey: December 16, 2014



Total Correction: 4.40 East Grid

Vertical Section Plane: 179.93 Nominal Dip Angle: 65.06 Magnetic Field Strength: 0.515

Measured			Coordinates				Closure			Vib/Shk						
Depth	Inc.	Azm.	T.V.D.	Ver. Sect.	+N/ -S	+E/ -W	Dist.	Angle	DLS	Mtr Yield	Temp (°F)	Color	Date	Time	Flow Rate	
Survey's are tied into: MWD										Date Received: 12/05/14						
Company: Pro Directional																
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
1	900.00	0.40	56.30	899.99	-1.74	1.74	2.61	3.14	56.30	0.04	0.00	73 °F	Green	12/05/14	10:21	598 (gpm)
2	995.00	0.60	309.40	994.99	-2.24	2.24	2.51	3.36	48.16	0.85	0.00	79 °F	Green	12/05/14	11:05	598 (gpm)
3	1090.00	0.90	276.00	1,089.98	-2.63	2.64	1.38	2.98	27.61	0.55	0.00	82 °F	Green	12/05/14	11:41	598 (gpm)
4	1184.00	1.90	275.80	1,183.95	-2.87	2.87	-0.91	3.01	342.49	1.06	0.00	86 °F	Green	12/05/14	12:28	598 (gpm)
5	1279.00	2.00	279.70	1,278.90	-3.31	3.31	-4.11	5.27	308.87	0.17	0.00	88 °F	Green	12/05/14	13:29	598 (gpm)
6	1469.00	2.20	285.40	1,468.77	-4.85	4.84	-10.89	11.92	293.95	0.15	0.00	93 °F	Green	12/05/14	14:48	598 (gpm)
7	1658.00	2.20	279.00	1,657.63	-6.39	6.37	-17.97	19.07	289.51	0.13	0.00	104 °F	Green	12/05/14	16:50	598 (gpm)
8	1845.00	1.00	269.90	1,844.56	-6.95	6.93	-23.15	24.16	286.66	0.65	0.00	104 °F	Green	12/05/14	18:50	598 (gpm)
9	2033.00	1.00	262.90	2,032.53	-6.75	6.72	-26.42	27.26	284.27	0.06	0.00	110 °F	Green	12/05/14	18:50	598 (gpm)
10	2223.00	0.60	276.70	2,222.51	-6.67	6.63	-29.05	29.80	282.86	0.23	0.00	117 °F	Green	12/05/14	23:03	598 (gpm)
11	2412.00	0.40	277.80	2,411.50	-6.87	6.84	-30.69	31.44	282.56	0.11	0.00	117 °F	Green	12/06/14	1:06	598 (gpm)
12	2599.00	0.30	320.60	2,598.50	-7.34	7.30	-31.64	32.48	283.00	0.15	0.00	117 °F	Green	12/06/14	2:41	598 (gpm)
13	2786.00	0.30	339.30	2,785.50	-8.18	8.14	-32.13	33.14	284.22	0.05	0.00	117 °F	Green	12/06/14	4:19	598 (gpm)
14	2974.00	0.40	17.80	2,973.49	-9.26	9.23	-32.10	33.40	286.03	0.13	0.00	77 °F	Green	12/06/14	8:29	598 (gpm)
15	3161.00	0.50	21.30	3,160.49	-10.65	10.61	-31.60	33.34	288.55	0.06	0.00	86 °F	Green	12/06/14	10:24	598 (gpm)
16	3257.00	0.30	26.50	3,256.48	-11.26	11.22	-31.34	33.29	289.70	0.21	0.00	90 °F	Green	12/06/14	11:08	598 (gpm)
17	3350.00	0.50	12.80	3,349.48	-11.87	11.84	-31.14	33.32	290.81	0.24	0.00	95 °F	Green	12/06/14	12:15	598 (gpm)
18	3443.00	0.70	12.20	3,442.48	-12.82	12.79	-30.93	33.47	292.46	0.22	0.00	100 °F	Green	12/06/14	13:03	598 (gpm)
19	3536.00	0.30	26.50	3,535.47	-13.60	13.56	-30.70	33.56	293.83	0.45	0.00	106 °F	Green	12/06/14	14:30	598 (gpm)
20	3629.00	0.20	358.80	3,628.47	-13.98	13.94	-30.60	33.62	294.49	0.17	0.00	111 °F	Green	12/06/14	16:27	598 (gpm)
21	3723.00	0.30	18.00	3,722.47	-14.38	14.34	-30.53	33.73	295.16	0.14	0.00	115 °F	Green	12/06/14	17:32	598 (gpm)
22	3817.00	0.00	279.30	3,816.47	-14.61	14.57	-30.45	33.76	295.57	0.32	0.00	117 °F	Green	12/06/14	18:59	598 (gpm)
23	3911.00	0.70	153.20	3,910.47	-14.10	14.06	-30.19	33.30	294.97	0.74	10.00	113 °F	Green	12/06/14	21:13	371 (gpm)
24	3943.00	3.20	176.50	3,942.45	-13.03	12.99	-30.05	32.74	293.38	8.04	10.00	113 °F	Green	12/06/14	22:13	371 (gpm)
25	3974.00	6.30	179.90	3,973.34	-10.46	10.43	-29.99	31.75	289.17	10.04	10.00	113 °F	Green	12/06/14	23:23	371 (gpm)
26	4006.00	9.30	179.90	4,005.04	-6.12	6.09	-29.98	30.60	281.47	9.38	10.00	109 °F	Green	12/07/14	0:32	371 (gpm)

MWD SURVEYS

Customer: Tapstone Energy
 Well: Mangen 36-34-10 #1H
 Field/Block: Mississippi Lime
 Co./Parish: Barber Co.
 State: KS

PGS Job #: LKS6115914
 MWD Operator: Ken Mitchell
 Directional Driller: Kyle Underwood
 Date of First Survey: December 5, 2014
 Date of Last Survey: December 16, 2014



Total Correction: 4.40 East Grid

Vertical Section Plane: 179.93 Nominal Dip Angle: 65.06 Magnetic Field Strength: 0.515

Measured Depth	Inc.	Azm.	T.V.D.	Ver. Sect.	Coordinates		Closure			Mtr Yield	Temp (°F)	Vib/Shk				
					+N/-S	+E/-W	Dist.	Angle	DLS			Color	Date	Time	Flow Rate	
27	4037.00	12.00	178.60	4,035.50	-0.39	0.36	-29.90	29.90	270.69	8.74	9.50	109 °F	Green	12/07/14	1:29	371 (gpm)
28	4068.00	14.10	177.40	4,065.70	6.60	-6.64	-29.65	30.39	257.38	6.83	9.50	109 °F	Green	12/07/14	2:19	371 (gpm)
29	4099.00	16.00	176.30	4,095.63	14.64	-14.67	-29.20	32.68	243.32	6.20	8.00	109 °F	Green	12/07/14	3:31	371 (gpm)
30	4130.00	18.10	176.80	4,125.27	23.71	-23.75	-28.66	37.22	230.36	6.79	8.00	108 °F	Green	12/07/14	4:38	371 (gpm)
31	4161.00	20.30	178.90	4,154.54	33.90	-33.93	-28.29	44.18	219.82	7.44	9.20	109 °F	Green	12/07/14	5:56	371 (gpm)
32	4192.00	23.00	179.70	4,183.35	45.33	-45.37	-28.15	53.39	211.82	8.76	8.80	109 °F	Green	12/07/14	7:00	371 (gpm)
33	4223.00	26.20	180.20	4,211.54	58.23	-58.27	-28.14	64.71	205.78	10.34	11.40	111 °F	Green	12/07/14	7:53	371 (gpm)
34	4254.00	29.50	179.70	4,238.94	72.71	-72.75	-28.13	78.00	201.14	10.67	12.70	111 °F	Green	12/07/14	8:46	465 (gpm)
35	4285.00	32.50	179.50	4,265.51	88.68	-88.71	-28.02	93.03	197.53	9.68	12.00	113 °F	Green	12/07/14	9:52	465 (gpm)
36	4317.00	35.20	179.60	4,292.09	106.50	-106.54	-27.88	110.12	194.66	8.44	14.20	113 °F	Green	12/07/14	10:41	465 (gpm)
37	4348.00	37.30	178.70	4,317.08	124.83	-124.86	-27.60	127.88	192.46	6.99	14.40	115 °F	Green	12/07/14	11:32	465 (gpm)
38	4378.00	39.00	178.30	4,340.68	143.35	-143.39	-27.11	145.93	190.71	5.73	15.60	115 °F	Green	12/07/14	12:36	465 (gpm)
39	4409.00	40.50	177.90	4,364.51	163.17	-163.20	-26.46	165.33	189.21	4.91	15.20	113 °F	Green	12/07/14	13:48	380 (gpm)
40	4440.00	42.00	177.60	4,387.82	183.59	-183.62	-25.65	185.40	187.95	4.88	13.70	113 °F	Green	12/07/14	14:45	479 (gpm)
41	4472.00	43.30	177.50	4,411.35	205.25	-205.28	-24.73	206.77	186.87	4.07	13.00	115 °F	Green	12/07/14	15:34	479 (gpm)
42	4503.00	44.80	177.40	4,433.63	226.78	-226.81	-23.77	228.06	185.98	4.84	15.00	115 °F	Green	12/07/14	16:27	479 (gpm)
43	4534.00	46.80	176.70	4,455.24	248.98	-249.01	-22.62	250.03	185.19	6.65	15.50	115 °F	Green	12/07/14	15:23	479 (gpm)
44	4565.00	48.80	176.40	4,476.06	271.90	-271.93	-21.24	272.76	184.47	6.49	15.00	117 °F	Green	12/07/14	18:27	479 (gpm)
45	4596.00	51.10	176.80	4,496.01	295.59	-295.62	-19.83	296.28	183.84	7.48	14.50	117 °F	Green	12/07/14	19:22	479 (gpm)
46	4627.00	53.10	177.10	4,515.05	320.02	-320.04	-18.53	320.58	183.31	6.50	14.50	117 °F	Green	12/07/14	20:30	479 (gpm)
47	4659.00	55.10	177.70	4,533.82	345.91	-345.93	-17.36	346.37	182.87	6.43	13.60	118 °F	Green	12/07/14	21:43	479 (gpm)
48	4691.00	57.50	178.70	4,551.57	372.52	-372.54	-16.52	372.91	182.54	7.94	13.60	118 °F	Green	12/07/14	22:46	479 (gpm)
49	4723.00	60.20	178.50	4,568.12	399.90	-399.92	-15.86	400.23	182.27	8.45	13.60	118 °F	Green	12/07/14	23:57	479 (gpm)
50	4755.00	62.90	178.90	4,583.36	428.02	-428.04	-15.22	428.31	182.04	8.51	13.60	118 °F	Green	12/08/14	0:47	479 (gpm)
51	4786.00	64.70	179.20	4,597.05	455.83	-455.85	-14.76	456.09	181.85	5.87	13.60	122 °F	Green	12/08/14	1:33	479 (gpm)
52	4817.00	65.30	179.60	4,610.15	483.93	-483.95	-14.46	484.16	181.71	2.26	13.60	122 °F	Green	12/08/14	2:37	479 (gpm)
53	4849.00	65.80	178.90	4,623.40	513.06	-513.07	-14.08	513.27	181.57	2.53	13.60	124 °F	Green	12/08/14	3:34	479 (gpm)
54	4881.00	66.20	179.60	4,636.41	542.29	-542.30	-13.70	542.48	181.45	2.36	0.00	124 °F	Green	12/08/14	4:44	479 (gpm)
55	4912.00	66.60	179.50	4,648.82	570.69	-570.71	-13.48	570.87	181.35	1.32	0.00	124 °F	Green	12/08/14	5:54	479 (gpm)

MWD SURVEYS

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 Field/Block: Mississippi Lime
 Co./Parish: Barber Co.
 State: KS

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Vertical Section Plane: 179.93 Nominal Dip Angle: 65.06 Magnetic Field Strength: 0.515

Measured Depth	Inc.	Azm.	T.V.D.	Ver. Sect.	Coordinates		Closure			Mtr Yield	Temp (°F)	Vib/Shk Color	Date	Time	Flow Rate	
					+N / -S	+E / -W	Dist.	Angle	DLS							
56	4943.00	66.60	179.10	4,661.13	599.14	-599.16	-13.13	599.30	181.26	1.18	0.00	126 °F	Green	12/08/14	6:56	479 (gpm)
57	4975.00	66.20	178.60	4,673.95	628.46	-628.48	-12.54	628.60	181.14	1.90	0.00	126 °F	Green	12/08/14	8:21	506 (gpm)
58	5007.00	67.70	178.80	4,686.47	657.90	-657.91	-11.87	658.02	181.03	4.72	14.00	126 °F	Green	12/08/14	9:21	506 (gpm)
59	5039.00	70.30	178.90	4,697.94	687.76	-687.78	-11.27	687.87	180.94	8.13	13.00	126 °F	Green	12/08/14	10:32	506 (gpm)
60	5071.00	73.60	179.10	4,707.85	718.18	-718.20	-10.74	718.28	180.86	10.33	15.00	126 °F	Green	12/08/14	11:35	506 (gpm)
61	5103.00	76.80	179.00	4,716.03	749.11	-749.13	-10.23	749.20	180.78	10.00	14.50	126 °F	Green	12/08/14	12:03	506 (gpm)
62	5182.00	84.60	179.20	4,728.78	827.01	-827.02	-9.01	827.07	180.62	9.88	0.00	117 °F	Green	12/10/14	2:01	229 (gpm)
63	5214.00	85.40	179.30	4,731.57	858.88	-858.89	-8.59	858.94	180.57	2.52	0.00	117 °F	Green	12/10/14	3:08	229 (gpm)
64	5245.00	86.90	179.40	4,733.66	889.81	-889.82	-8.24	889.86	180.53	4.85	0.00	117 °F	Green	12/10/14	4:13	229 (gpm)
65	5277.00	88.90	179.70	4,734.83	921.78	-921.80	-7.99	921.83	180.50	6.32	0.00	117 °F	Green	12/10/14	5:16	229 (gpm)
66	5307.00	90.20	179.70	4,735.06	951.78	-951.79	-7.83	951.83	180.47	4.33	0.00	118 °F	Green	12/10/14	6:08	229 (gpm)
67	5337.00	90.80	180.00	4,734.80	981.78	-981.79	-7.75	981.82	180.45	2.24	0.00	120 °F	Green	12/10/14	6:43	249 (gpm)
68	5368.00	91.10	180.40	4,734.29	1,012.78	-1,012.79	-7.86	1,012.82	180.44	1.61	0.00	120 °F	Green	12/10/14	7:18	249 (gpm)
69	5398.00	91.30	181.00	4,733.66	1,042.77	-1,042.78	-8.23	1,042.81	180.45	2.11	0.00	122 °F	Green	12/10/14	7:43	249 (gpm)
70	5458.00	91.50	180.80	4,732.19	1,102.74	-1,102.75	-9.17	1,102.79	180.48	0.47	0.00	122 °F	Green	12/10/14	8:36	249 (gpm)
71	5517.00	88.40	178.70	4,732.24	1,161.73	-1,161.74	-8.91	1,161.78	180.44	6.35	0.00	122 °F	Green	12/10/14	9:27	249 (gpm)
72	5547.00	87.20	178.00	4,733.40	1,191.70	-1,191.71	-8.05	1,191.73	180.39	4.63	0.00	122 °F	Green	12/10/14	9:55	249 (gpm)
73	5578.00	88.10	178.30	4,734.67	1,222.65	-1,222.66	-7.05	1,222.68	180.33	3.06	0.00	122 °F	Green	12/10/14	10:25	249 (gpm)
74	5609.00	90.10	178.80	4,735.15	1,253.64	-1,253.65	-6.27	1,253.66	180.29	6.65	0.00	122 °F	Green	12/10/14	10:54	249 (gpm)
75	5639.00	90.30	178.30	4,735.05	1,283.63	-1,283.64	-5.51	1,283.65	180.25	1.80	0.00	122 °F	Green	12/10/14	11:25	249 (gpm)
76	5670.00	90.00	177.30	4,734.97	1,314.61	-1,314.62	-4.32	1,314.62	180.19	3.37	0.00	124 °F	Green	12/10/14	11:54	249 (gpm)
77	5701.00	89.80	177.10	4,735.02	1,345.57	-1,345.58	-2.80	1,345.58	180.12	0.91	0.00	124 °F	Green	12/10/14	12:23	249 (gpm)
78	5731.00	89.80	177.10	4,735.13	1,375.54	-1,375.54	-1.28	1,375.54	180.05	0.00	0.00	124 °F	Green	12/10/14	13:02	249 (gpm)
79	5761.00	90.20	177.30	4,735.13	1,405.50	-1,405.50	0.18	1,405.50	179.99	1.49	0.00	124 °F	Green	12/10/14	13:34	249 (gpm)
80	5791.00	90.20	177.20	4,735.02	1,435.47	-1,435.47	1.62	1,435.47	179.94	0.33	0.00	126 °F	Green	12/10/14	14:18	249 (gpm)
81	5822.00	90.70	177.20	4,734.78	1,466.43	-1,466.43	3.14	1,466.43	179.88	1.61	0.00	126 °F	Green	12/10/14	15:01	249 (gpm)
82	5852.00	90.90	177.10	4,734.36	1,496.40	-1,496.39	4.63	1,496.40	179.82	0.75	0.00	126 °F	Green	12/10/14	15:59	249 (gpm)
83	5914.00	89.80	177.20	4,733.98	1,558.32	-1,558.31	7.71	1,558.33	179.72	1.78	0.00	129 °F	Green	12/10/14	17:25	249 (gpm)
84	5944.00	89.50	177.10	4,734.16	1,588.28	-1,588.27	9.20	1,588.30	179.67	1.05	0.00	129 °F	Green	12/10/14	18:47	249 (gpm)

MWD SURVEYS

Customer: Tapstone Energy
Well: Mangen 36-34-10 #1H
Field/Block: Mississippi Lime
Co./Parish: Barber Co.
State: KS

PGS Job #: LKS6115914
MWD Operator: Ken Mitchell
Directional Driller: Kyle Underwood
Date of First Survey: December 5, 2014
Date of Last Survey: December 16, 2014



Total Correction: 4.40 East Grid

Vertical Section Plane: 179.93 Nominal Dip Angle: 65.06 Magnetic Field Strength: 0.515

Measured Depth	Inc.	Azm.	T.V.D.	Ver. Sect.	Coordinates		Closure			Mtr Yield	Temp (°F)	Vib/Shk Color	Date	Time	Flow Rate	
					+N / -S	+E / -W	Dist.	Angle	DLS							
85	5975.00	89.70	177.70	4,734.38	1,619.25	-1,619.24	10.61	1,619.28	179.62	2.04	0.00	129 °F	Green	12/10/14	20:24	249 (gpm)
86	6006.00	89.80	178.20	4,734.52	1,650.23	-1,650.22	11.72	1,650.26	179.59	1.64	0.00	131 °F	Green	12/10/14	21:42	249 (gpm)
87	6036.00	90.40	178.50	4,734.46	1,680.22	-1,680.21	12.58	1,680.26	179.57	2.24	0.00	131 °F	Green	12/10/14	23:33	249 (gpm)
88	6067.00	91.10	178.90	4,734.06	1,711.21	-1,711.20	13.28	1,711.25	179.56	2.60	0.00	129 °F	Green	12/11/14	9:16	246 (gpm)
89	6098.00	91.00	179.20	4,733.49	1,742.20	-1,742.19	13.80	1,742.24	179.55	1.02	0.00	131 °F	Green	12/11/14	10:05	249 (gpm)
90	6129.00	91.10	179.40	4,732.92	1,773.20	-1,773.18	14.18	1,773.24	179.54	0.72	0.00	131 °F	Green	12/11/14	10:56	249 (gpm)
91	6190.00	91.10	179.40	4,731.75	1,834.18	-1,834.17	14.81	1,834.23	179.54	0.00	0.00	133 °F	Green	12/11/14	12:24	249 (gpm)
92	6250.00	90.90	179.70	4,730.70	1,894.17	-1,894.16	15.29	1,894.22	179.54	0.60	0.00	135 °F	Green	12/11/14	13:49	249 (gpm)
93	6281.00	90.90	179.90	4,730.22	1,925.17	-1,925.15	15.39	1,925.21	179.54	0.65	0.00	135 °F	Green	12/11/14	14:40	249 (gpm)
94	6341.00	89.90	180.10	4,729.80	1,985.17	-1,985.15	15.39	1,985.21	179.56	1.70	0.00	136 °F	Green	12/11/14	16:02	249 (gpm)
95	6371.00	89.70	180.60	4,729.90	2,015.16	-2,015.15	15.21	2,015.21	179.57	1.80	0.00	136 °F	Green	12/11/14	16:50	249 (gpm)
96	6431.00	89.70	180.60	4,730.22	2,075.16	-2,075.14	14.58	2,075.20	179.60	0.00	0.00	138 °F	Green	12/11/14	18:04	249 (gpm)
97	6491.00	88.90	181.10	4,730.95	2,135.15	-2,135.13	13.69	2,135.18	179.63	1.57	0.00	138 °F	Green	12/11/14	19:50	249 (gpm)
98	6553.00	89.10	181.00	4,732.03	2,197.13	-2,197.11	12.56	2,197.15	179.67	0.36	0.00	138 °F	Green	12/11/14	21:52	249 (gpm)
99	6614.00	89.20	180.30	4,732.94	2,258.11	-2,258.10	11.86	2,258.13	179.70	1.16	0.00	140 °F	Green	12/11/14	23:44	249 (gpm)
100	6674.00	89.40	180.00	4,733.67	2,318.11	-2,318.10	11.71	2,318.13	179.71	0.60	0.00	140 °F	Green	12/12/14	2:13	249 (gpm)
101	6735.00	89.40	179.80	4,734.31	2,379.11	-2,379.09	11.81	2,379.12	179.72	0.33	0.00	140 °F	Green	12/12/14	4:34	249 (gpm)
102	6796.00	90.70	180.20	4,734.26	2,440.10	-2,440.09	11.81	2,440.12	179.72	2.23	0.00	140 °F	Green	12/12/14	6:07	249 (gpm)
103	6827.00	91.40	180.20	4,733.69	2,471.10	-2,471.09	11.71	2,471.11	179.73	2.26	0.00	140 °F	Green	12/12/14	6:52	249 (gpm)
104	6858.00	91.60	180.40	4,732.88	2,502.09	-2,502.07	11.54	2,502.10	179.74	0.91	0.00	142 °F	Green	12/12/14	8:33	249 (gpm)
105	6888.00	90.80	180.10	4,732.25	2,532.08	-2,532.07	11.41	2,532.09	179.74	2.85	0.00	144 °F	Green	12/12/14	9:35	249 (gpm)
106	6919.00	90.20	180.20	4,731.98	2,563.08	-2,563.07	11.33	2,563.09	179.75	1.96	0.00	144 °F	Green	12/12/14	10:31	249 (gpm)
107	6980.00	90.30	179.60	4,731.71	2,624.08	-2,624.07	11.44	2,624.09	179.75	1.00	0.00	146 °F	Green	12/12/14	12:13	249 (gpm)
108	7011.00	90.20	179.80	4,731.58	2,655.08	-2,655.06	11.60	2,655.09	179.75	0.72	0.00	144 °F	Green	12/12/14	14:03	249 (gpm)
109	7072.00	89.70	179.80	4,731.63	2,716.08	-2,716.06	11.81	2,716.09	179.75	0.82	0.00	145 °F	Green	12/12/14	15:28	249 (gpm)
110	7103.00	89.10	179.40	4,731.95	2,747.07	-2,747.06	12.03	2,747.09	179.75	2.33	0.00	144 °F	Green	12/12/14	16:25	249 (gpm)
111	7135.00	88.60	179.40	4,732.60	2,779.07	-2,779.05	12.36	2,779.08	179.75	1.56	0.00	144 °F	Green	12/12/14	17:27	249 (gpm)
112	7166.00	88.20	179.50	4,733.46	2,810.05	-2,810.04	12.66	2,810.07	179.74	1.33	0.00	145 °F	Green	12/12/14	18:43	249 (gpm)
113	7198.00	87.70	179.20	4,734.61	2,842.03	-2,842.02	13.02	2,842.05	179.74	1.82	0.00	145 °F	Green	12/12/14	19:43	249 (gpm)

MWD SURVEYS

Customer: Tapstone Energy
 Well: Mangen 36-34-10 #1H
 Field/Block: Mississippi Lime
 Co./Parish: Barber Co.
 State: KS

PGS Job #: LKS6115914
 MWD Operator: Ken Mitchell
 Directional Driller: Kyle Underwood
 Date of First Survey: December 5, 2014
 Date of Last Survey: December 16, 2014



Total Correction: 4.40 East Grid

Vertical Section Plane: 179.93 Nominal Dip Angle: 65.06 Magnetic Field Strength: 0.515

	Measured		Coordinates				Closure			Mtr Yield	Temp (°F)	Vib/Shk				
	Depth	Inc.	Azm.	T.V.D.	Ver. Sect.	+N/-S	+E/-W	Dist.	Angle			DLS	Color	Date	Time	Flow Rate
114	7229.00	87.50	179.30	4,735.90	2,873.00	-2,872.99	13.43	2,873.02	179.73	0.72	0.00	145 °F	Green	12/12/14	21:33	249 (gpm)
115	7260.00	87.80	179.50	4,737.18	2,903.97	-2,903.96	13.75	2,903.99	179.73	1.16	0.00	145 °F	Green	12/12/14	23:03	249 (gpm)
116	7292.00	88.00	179.40	4,738.35	2,935.95	-2,935.94	14.06	2,935.97	179.73	0.70	0.00	145 °F	Green	12/13/14	0:16	249 (gpm)
117	7323.00	87.90	179.40	4,739.46	2,966.93	-2,966.91	14.39	2,966.95	179.72	0.32	0.00	145 °F	Green	12/13/14	1:18	249 (gpm)
118	7355.00	87.70	179.70	4,740.69	2,998.91	-2,998.89	14.64	2,998.93	179.72	1.13	0.00	145 °F	Green	12/13/14	2:49	249 (gpm)
119	7387.00	87.50	179.60	4,742.03	3,030.88	-3,030.86	14.83	3,030.90	179.72	0.70	0.00	145 °F	Green	12/13/14	4:54	249 (gpm)
120	7418.00	87.40	179.80	4,743.40	3,061.85	-3,061.83	14.99	3,061.87	179.72	0.72	0.00	145 °F	Green	12/13/14	6:42	249 (gpm)
121	7449.00	87.80	179.30	4,744.70	3,092.82	-3,092.80	15.24	3,092.84	179.72	2.06	0.00	150 °F	Green	12/13/14	19:00	249 (gpm)
122	7481.00	87.80	179.10	4,745.93	3,124.79	-3,124.77	15.68	3,124.81	179.71	0.62	0.00	153 °F	Yellow	12/13/14	20:25	249 (gpm)
123	7513.00	88.10	179.40	4,747.08	3,156.77	-3,156.75	16.10	3,156.79	179.71	1.33	0.00	153 °F	Yellow	12/13/14	22:02	249 (gpm)
124	7544.00	88.10	179.70	4,748.10	3,187.75	-3,187.73	16.35	3,187.78	179.71	0.97	0.00	153 °F	Yellow	12/13/14	23:24	249 (gpm)
125	7576.00	88.30	179.70	4,749.11	3,219.74	-3,219.72	16.51	3,219.76	179.71	0.63	0.00	153 °F	Yellow	12/14/14	0:41	249 (gpm)
126	7607.00	88.20	179.60	4,750.06	3,250.72	-3,250.70	16.70	3,250.75	179.71	0.46	0.00	153 °F	Yellow	12/14/14	2:38	249 (gpm)
127	7639.00	88.30	180.00	4,751.03	3,282.71	-3,282.69	16.81	3,282.73	179.71	1.29	0.00	153 °F	Pink	12/14/14	3:53	249 (gpm)
128	7671.00	88.30	180.20	4,751.98	3,314.69	-3,314.67	16.76	3,314.72	179.71	0.62	0.00	153 °F	Yellow	12/14/14	5:02	249 (gpm)
129	7702.00	88.60	180.40	4,752.82	3,345.68	-3,345.66	16.60	3,345.70	179.72	1.16	0.00	156 °F	Yellow	12/14/14	6:29	249 (gpm)
130	7734.00	88.60	180.50	4,753.60	3,377.67	-3,377.65	16.34	3,377.69	179.72	0.31	0.00	156 °F	Yellow	12/14/14	7:44	249 (gpm)
131	7766.00	88.20	180.60	4,754.50	3,409.65	-3,409.64	16.04	3,409.67	179.73	1.29	0.00	151 °F	Yellow	12/14/14	16:44	249 (gpm)
132	7797.00	88.60	180.60	4,755.36	3,440.64	-3,440.62	15.71	3,440.66	179.74	1.29	0.00	151 °F	Yellow	12/14/14	17:54	249 (gpm)
133	7829.00	89.50	180.40	4,755.89	3,472.63	-3,472.62	15.43	3,472.65	179.75	2.88	0.00	151 °F	Yellow	12/14/14	18:37	249 (gpm)
134	7861.00	89.70	180.40	4,756.12	3,504.63	-3,504.62	15.21	3,504.65	179.75	0.63	0.00	151 °F	Yellow	12/14/14	19:27	249 (gpm)
135	7892.00	89.80	179.80	4,756.25	3,535.63	-3,535.61	15.16	3,535.65	179.75	1.96	0.00	151 °F	Yellow	12/14/14	20:07	249 (gpm)
136	7924.00	90.00	179.80	4,756.31	3,567.63	-3,567.61	15.27	3,567.65	179.75	0.63	0.00	153 °F	Yellow	12/14/14	21:08	249 (gpm)
137	7955.00	89.10	180.20	4,756.55	3,598.63	-3,598.61	15.27	3,598.65	179.76	3.18	0.00	153 °F	Yellow	12/14/14	21:52	249 (gpm)
138	7987.00	89.20	180.20	4,757.02	3,630.63	-3,630.61	15.16	3,630.64	179.76	0.31	0.00	153 °F	Yellow	12/14/14	22:41	249 (gpm)
139	8018.00	89.40	180.00	4,757.40	3,661.62	-3,661.61	15.10	3,661.64	179.76	0.91	0.00	153 °F	Yellow	12/14/14	23:32	249 (gpm)
140	8050.00	89.80	180.30	4,757.63	3,693.62	-3,693.61	15.02	3,693.64	179.77	1.56	0.00	154 °F	Yellow	12/15/14	0:24	249 (gpm)
141	8082.00	90.10	180.40	4,757.65	3,725.62	-3,725.61	14.82	3,725.63	179.77	0.99	0.00	154 °F	Yellow	12/15/14	1:22	249 (gpm)
142	8113.00	90.20	179.90	4,757.57	3,756.62	-3,756.61	14.74	3,756.63	179.78	1.64	0.00	154 °F	Yellow	12/15/14	2:36	249 (gpm)

MWD SURVEYS

Customer: Tapstone Energy
 Well: Mangen 36-34-10 #1H
 Field/Block: Mississippi Lime
 Co./Parish: Barber Co.
 State: KS

PGS Job #: LKS6115914
 MWD Operator: Ken Mitchell
 Directional Driller: Kyle Underwood
 Date of First Survey: December 5, 2014
 Date of Last Survey: December 16, 2014



Total Correction: 4.40 East Grid

Vertical Section Plane: 179.93 Nominal Dip Angle: 65.06 Magnetic Field Strength: 0.515

	Measured					Coordinates		Closure			Mtr Yield	Temp (°F)	Vib/Shk			
	Depth	Inc.	Azm.	T.V.D.	Ver. Sect.	+N / -S	+E / -W	Dist.	Angle	DLS			Color	Date	Time	Flow Rate
143	8144.00	89.80	179.80	4,757.57	3,787.62	-3,787.60	14.82	3,787.63	179.78	1.33	0.00	154 °F	Yellow	12/15/14	3:30	249 (gpm)
144	8176.00	89.90	179.70	4,757.66	3,819.62	-3,819.60	14.96	3,819.63	179.78	0.44	0.00	154 °F	Yellow	12/15/14	4:51	249 (gpm)
145	8207.00	89.10	179.50	4,757.93	3,850.62	-3,850.60	15.18	3,850.63	179.77	2.66	0.00	154 °F	Yellow	12/15/14	5:43	249 (gpm)
146	8238.00	89.00	179.60	4,758.44	3,881.61	-3,881.60	15.42	3,881.63	179.77	0.46	0.00	156 °F	Yellow	12/15/14	6:44	249 (gpm)
147	8270.00	89.00	179.60	4,759.00	3,913.61	-3,913.59	15.65	3,913.62	179.77	0.00	0.00	156 °F	Yellow	12/15/14	7:54	249 (gpm)
148	8302.00	89.90	179.80	4,759.31	3,945.61	-3,945.59	15.81	3,945.62	179.77	2.88	0.00	156 °F	Yellow	12/15/14	8:55	249 (gpm)
149	8333.00	90.30	179.60	4,759.25	3,976.61	-3,976.59	15.98	3,976.62	179.77	1.44	0.00	156 °F	Yellow	12/15/14	10:17	249 (gpm)
150	8365.00	89.50	179.70	4,759.31	4,008.60	-4,008.59	16.17	4,008.62	179.77	2.52	0.00	153 °F	Yellow	12/15/14	11:48	249 (gpm)
151	8396.00	88.50	179.60	4,759.85	4,039.60	-4,039.58	16.36	4,039.62	179.77	3.24	0.00	151 °F	Yellow	12/15/14	12:56	249 (gpm)
152	8427.00	88.50	179.50	4,760.66	4,070.59	-4,070.57	16.60	4,070.60	179.77	0.32	0.00	147 °F	Yellow	12/15/14	14:03	249 (gpm)
153	8459.00	88.50	179.60	4,761.50	4,102.58	-4,102.56	16.86	4,102.59	179.76	0.31	0.00	138 °F	Yellow	12/16/14	2:56	249 (gpm)
154	8490.00	88.60	179.60	4,762.28	4,133.57	-4,133.55	17.07	4,133.58	179.76	0.32	0.00	138 °F	Yellow	12/16/14	3:43	249 (gpm)
155	8522.00	88.80	179.10	4,763.01	4,165.56	-4,165.54	17.43	4,165.57	179.76	1.68	0.00	138 °F	Yellow	12/16/14	4:32	249 (gpm)
156	8553.00	88.50	179.00	4,763.74	4,196.54	-4,196.52	17.95	4,196.56	179.75	1.02	0.00	140 °F	Yellow	12/16/14	5:22	249 (gpm)
157	8584.00	88.50	178.90	4,764.55	4,227.53	-4,227.51	18.52	4,227.55	179.75	0.32	0.00	140 °F	Yellow	12/16/14	6:34	249 (gpm)
158	8616.00	88.80	179.00	4,765.31	4,259.51	-4,259.49	19.10	4,259.54	179.74	0.99	0.00	140 °F	Yellow	12/16/14	7:25	249 (gpm)
159	8647.00	88.90	178.80	4,765.93	4,290.50	-4,290.48	19.70	4,290.53	179.74	0.72	0.00	142 °F	Yellow	12/16/14	8:21	249 (gpm)
160	8679.00	88.90	178.50	4,766.54	4,322.49	-4,322.47	20.45	4,322.52	179.73	0.94	0.00	142 °F	Yellow	12/16/14	9:08	249 (gpm)
161	8711.00	89.10	178.70	4,767.10	4,354.48	-4,354.45	21.23	4,354.50	179.72	0.88	0.00	142 °F	Yellow	12/16/14	10:28	249 (gpm)
162	8743.00	89.70	178.80	4,767.44	4,386.47	-4,386.44	21.93	4,386.50	179.71	1.90	0.00	142 °F	Yellow	12/16/14	11:18	249 (gpm)
163	8774.00	89.70	178.70	4,767.60	4,417.46	-4,417.44	22.61	4,417.49	179.71	0.32	0.00	142 °F	Yellow	12/16/14	11:53	249 (gpm)
164	8806.00	90.00	178.90	4,767.68	4,449.45	-4,449.43	23.28	4,449.49	179.70	1.13	0.00	144 °F	Yellow	12/16/14	12:42	249 (gpm)
165	8837.00	90.20	178.90	4,767.63	4,480.45	-4,480.42	23.87	4,480.49	179.69	0.65	0.00	144 °F	Yellow	12/16/14	13:18	249 (gpm)
166	8869.00	89.90	178.20	4,767.60	4,512.44	-4,512.41	24.68	4,512.48	179.69	2.38	0.00	144 °F	Yellow	12/16/14	14:04	249 (gpm)
167	8900.00	89.50	177.60	4,767.76	4,543.42	-4,543.39	25.82	4,543.46	179.67	2.33	0.00	144 °F	Yellow	12/16/14	15:10	249 (gpm)
168	8932.00	89.50	177.50	4,768.04	4,575.39	-4,575.36	27.19	4,575.44	179.66	0.31	0.00	145 °F	Yellow	12/16/14	15:52	249 (gpm)
169	8963.00	89.80	177.40	4,768.23	4,606.36	-4,606.33	28.57	4,606.42	179.64	1.02	0.00	145 °F	Yellow	12/16/14	16:39	249 (gpm)
170	8995.00	89.70	177.00	4,768.37	4,638.32	-4,638.29	30.13	4,638.39	179.63	1.29	0.00	145 °F	Yellow	12/16/14	17:27	249 (gpm)
171	9050.00	89.40	176.80	4,768.80	4,693.25	-4,693.21	33.10	4,693.32	179.60	0.66	0.00	145 °F	Yellow	12/16/14	19:10	249 (gpm)

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Total Correction: 4.40 East Grid

Vertical Section Plane: 179.93 Nominal Dip Angle: 65.06 Magnetic Field Strength: 0.515

	<i>Measured</i>			<i>Coordinates</i>				<i>Closure</i>			<i>Vib/Shk</i>					
	<i>Depth</i>	<i>Inc.</i>	<i>Azm.</i>	<i>T.V.D.</i>	<i>Ver. Sect.</i>	<i>+N / -S</i>	<i>+E / -W</i>	<i>Dist.</i>	<i>Angle</i>	<i>DLS</i>	<i>Mtr Yield</i>	<i>Temp (°F)</i>	<i>Color</i>	<i>Date</i>	<i>Time</i>	<i>Flow Rate</i>
TD	9100.00	89.40	176.80	4,769.33	4,743.17	-4,743.13	35.89	4,743.26	179.57	0.00						

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<i>Measured</i>			<i>Coordinates</i>				<i>Closure</i>			<i>Vib/Shk</i>					
<i>Depth</i>	<i>Inc.</i>	<i>Azm.</i>	<i>T.V.D.</i>	<i>Ver. Sect.</i>	<i>+N / -S</i>	<i>+E / -W</i>	<i>Dist.</i>	<i>Angle</i>	<i>DLS</i>	<i>Mtr Yield</i>	<i>Temp (°F)</i>	<i>Color</i>	<i>Date</i>	<i>Time</i>	<i>Flow Rate</i>

MWD SURVEYS

Customer: Tapstone Energy
 Well: Mangen 36-34-10 #1H
 Field/Block: Mississippi Lime
 Co./Parish: Barber Co.
 State: KS

PGS Job #: LKS6115914
 MWD Operator: Ken Mitchell
 Directional Driller: Kyle Underwood
 Date of First Survey: December 5, 2014
 Date of Last Survey: December 16, 2014



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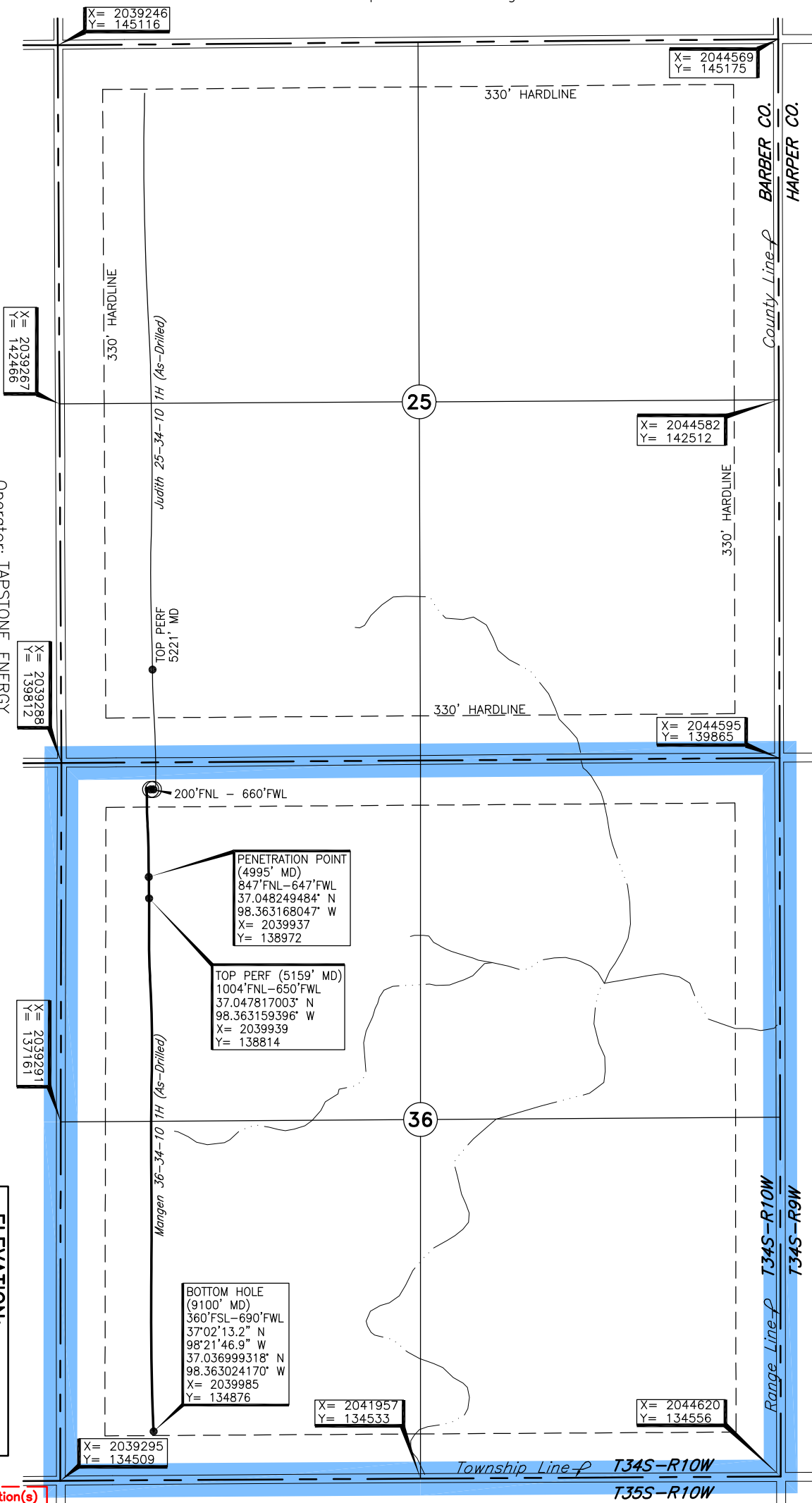
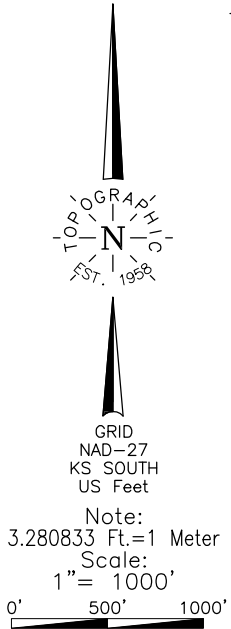
TOPOGRAPHIC LAND SURVEYORS

6709 NORTH CLASSEN BLVD., OKLA. CITY, OKLA. 73116 * LOCAL (405) 843-4847 * OUT OF STATE (800) 654-3219
 Certificate of Authorization No. LS-99, Exp. Dec. 31, 2015

BARBER

County, Kansas

200'FNL - 660'FWL Section 36 Township 34S Range 10W P.M.



Operator: TAPSTONE ENERGY
 Lease Name: MANGEN 36-34-10
 Topography & Vegetation: Loc. fell in gently sloping wheat field
 Well No.: 1H
 ELEVATION: 1301' Gr. at Stake

Good Drill Site? Yes
 Reference Stakes or Alternate Location: Stakes Set None

Best Accessibility to Location: From North off county road
 Distance & Direction from Hwy Jct or Town: From Kiowa, KS, go ±3.5 mi. East on paved road, then ±1.3 mi. North, then ±3.0 mi. East, then ±1.0 mi. North to the NW Cor. of Sec. 36-T34S-R10W

A boundary survey of the said section(s) shown hereon was not performed per the request of the operator shown hereon.

DATUM: NAD-27
 LAT: 37°03'00.1"N
 LONG: 98°21'47.2"W
 LAT: 37.050026017° N
 LONG: 98.363123264° W
 STATE PLANE COORDINATES: (US Feet)
 ZONE: KS SOUTH
 X: 2039949
 Y: 139619

238167 Date of Drawing: Dec. 23, 2014
 Invoice # 232758A Date Staked: Oct. 22, 2014 JP

FINAL AS-DRILLED PLAT

AS-DRILLED INFORMATION
 FURNISHED BY TAPSTONE ENERGY

HALLIBURTON

iCem[®] Service

TAPSTONE ENERGY LLC

For:

Date: Thursday, December 04, 2014

Mangen 1H

Case 1

Sincerely,

Legal Notice

Warning Disclaimer

Although the information contained in this report is based on sound engineering practices, the copyright owner(s) does (do) not accept any responsibility whatsoever, in negligence or otherwise, for any loss or damage arising from the possession or use of the report whether in terms of correctness or otherwise. The application, therefore, by the user of this report or any part thereof, is solely at the user's own risk.

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HALLIBURTON

Table of Contents

To Generate a Table of Contents, right click here. Click "Update Field." If prompted, select "Entire Table."

1.0 Job Design

1.1 Time of Stages

Graph Label	Time (min)	Stage Starts Pumping	Stage Enters Annulus
①	0	Depart Location	
②	0	Pre-Rig Down Safety Meeting	
③	0	Pre-Convoy Safety Meeting	
④	0	Rig-Down Completed	
⑤	0	Other	

2.0 Hydraulics Summary

3.0 Temperature Modeling

4.0 Real-Time Job Summary

4.1 Stage Summary - Liquid Volume, Density, & Design Shutdown

4.2 Stage Summary - Pump Pressure & ECD

4.3 Stage Summary - Pump Rate & Nitrogen Rate

4.4 Shutdown Summary

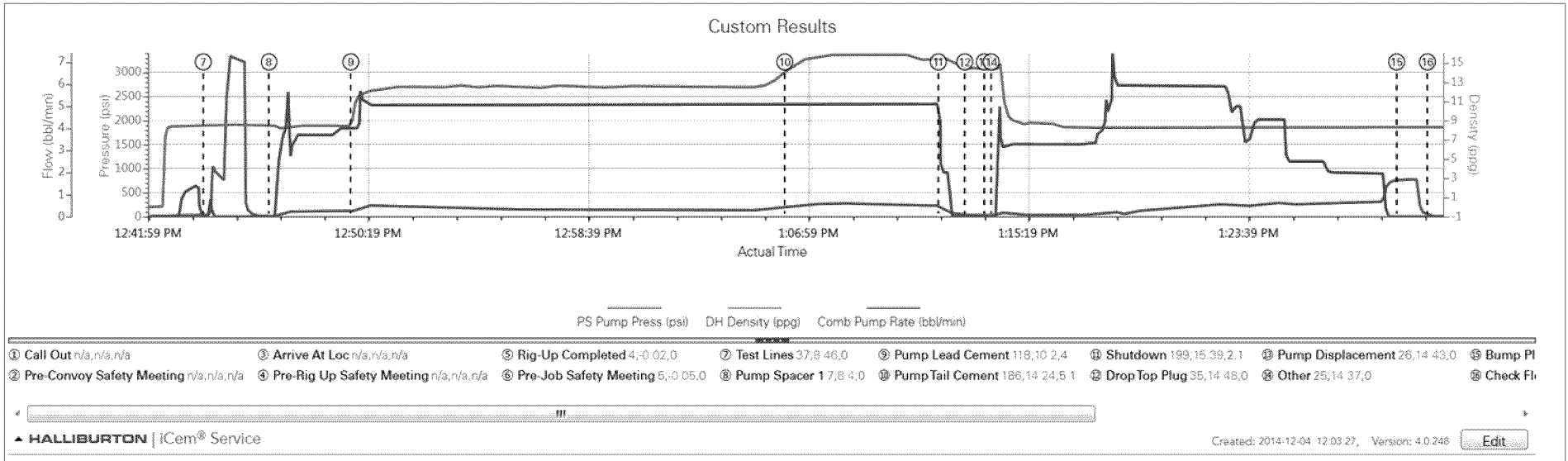
4.5 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	12/4/2014	07:00:00	USER				
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	12/4/2014	08:30:00	USER				use smith driving skills know route
Event	3	Arrive At Loc	Arrive At Loc	12/4/2014	11:30:00	USER				
Event	4	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	12/4/2014	11:45:00	USER				watch pinch points slips falls stay hydrated
Event	5	Rig-Up Completed	Rig-Up Completed	12/4/2014	12:30:00	USER				
Event	6	Pre-Job Safety Meeting	Pre-Job Safety Meeting	12/4/2014	12:40:00	USER				Stay away from red iron dont step over stay hydrated
Event	7	Test Lines	Test Lines	12/4/2014	12:44:09	COM5	3000.00	8.34	0.00	test 500psi low 3000psi high good test
Event	8	Pump Spacer 1	Pump Spacer 1	12/4/2014	12:46:39	COM5	87.00	8.34	4.00	pumped 10bbls water ahead good returns
Event	9	Pump Lead Cement	Pump Lead Cement	12/4/2014	12:49:45	COM5	118.00	12.40	4.00	pumped 87bbls (230sks) 12.4# good returns
Event	10	Pump Tail Cement	Pump Tail Cement	12/4/2014	13:06:10	COM5	186.00	15.60	5.00	pumped 32bbls (150sks) 15.6# good returns
Event	11	Shutdown	Shutdown	12/4/2014	13:12:00	USER				
Event	12	Drop Top Plug	Drop Top Plug	12/4/2014	13:13:00	USER				
Event	13	Pump Displacement	Pump Displacement	12/4/2014	13:13:44	COM5	126.00	8.34	5.00	pumped 59bbls of water good returns
Event	14	Other	Other	12/4/2014	13:14:00	USER	125.00	8.34	5.00	cement to surface 59bbls back
Event	15	Bump Plug	Bump Plug	12/4/2014	13:29:20	COM5	770.00	8.34	0.00	bumped plug 500 over 3 800psi
Event	16	Check Floats	Check Floats	12/4/2014	13:30:30	USER				floats held 1/2 bbl back
Event	17	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	12/4/2014	13:45:00	USER				watch pinch points slips falls stay hydrated
Event	18	Rig-Down Completed	Rig-Down Completed	12/4/2014	14:10:00	USER				
Event	19	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	12/4/2014	14:15:00	USER				use smith driving skills know route

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Comments
Event	20	Depart Location	Depart Location	12/4/2014	14:45:00	USER				

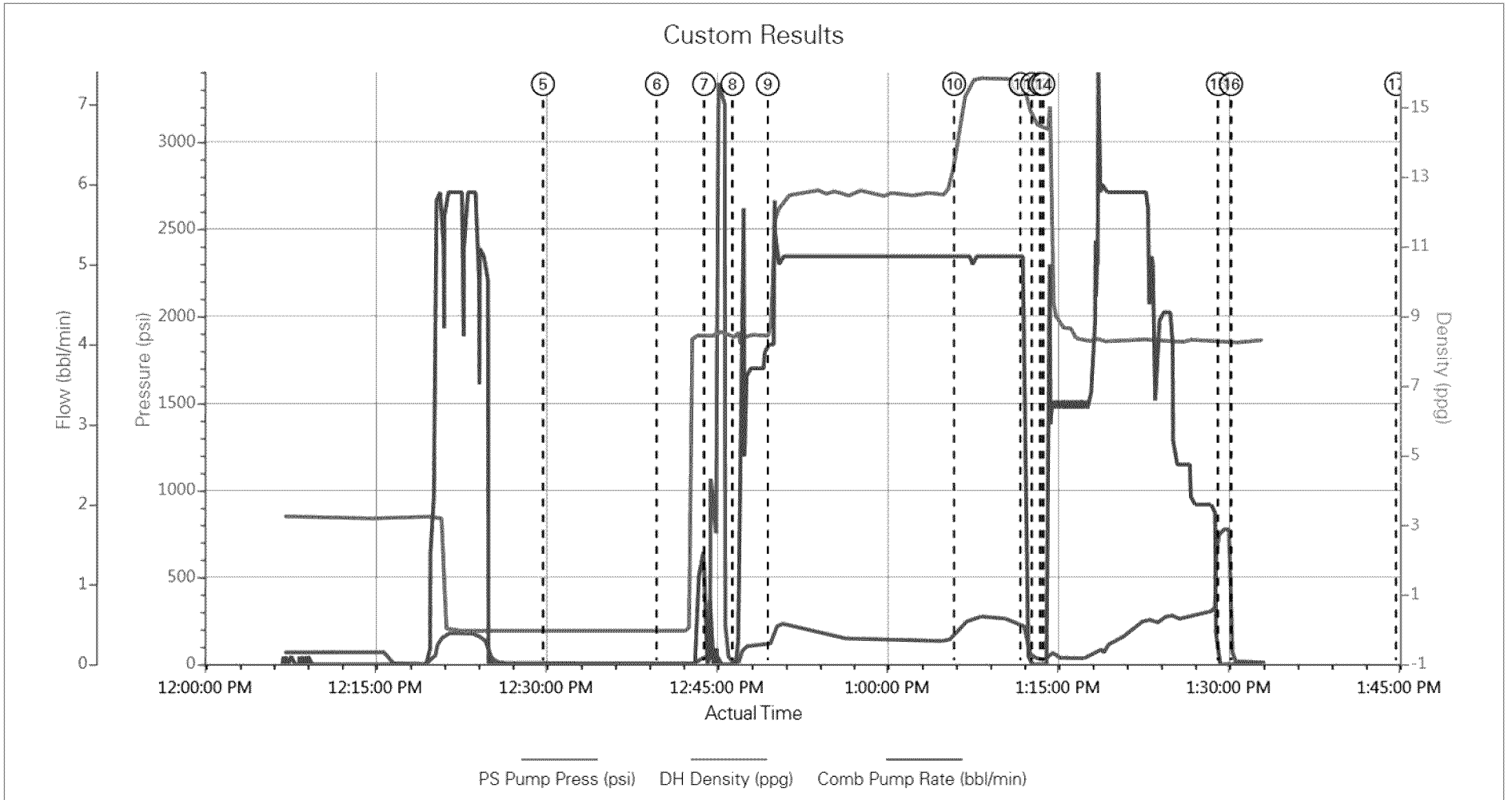
5.0 Attachments

5.1 Case 1-Custom Results.png



6.0 Custom Graphs

6.1 Custom Graph



7.0 Appendix

7.1 One-Minutes Real-Time Data Listing

HALLIBURTON

Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 372073	Ship To #: 3617299	Quote #: 0021966946	Sales Order #: 0901910792
Customer: TAPSTONE ENERGY LLC		Customer Rep: SKIP	
Well Name: MANGEN 36-4-10	Well #: 1H	API/UWI #: 15-007-24248-01	
Field: UNDESIGNATED	City (SAP): HAZELTON	County/Parish: BARBER	State: KANSAS
Legal Description: N2 N2 NW NW-36-34S-10W-200FNL-660FWL			
Contractor: NOMAC		Rig/Platform Name/Num: NOMAC 07	
Job BOM: 7522			
Well Type: HORIZONTAL OIL		Srvc Supervisor: Robert Husted	
Sales Person: HALAMERICA/HX25353		Job	

Formation Name		Bottom	
Formation Depth (MD)	Top	BHST	
Form Type		Job Depth TVD	
Job depth MD	5212ft	Wk Ht Above Floor	
Water Depth		To	
Perforation Depth (MD)	From		

Well Data

Description	New / Used	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft
Casing	3	9.625	8.921	36	LTC	J-55	0	800		
Casing	3	7	6.276	26	LTC	P-110	0	5212	0	4730
Open Hole Section			6.75				800	5212	800	4730

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	7			5159	Top Plug	7	1	HES
Float Shoe	7				Bottom Plug	7	1	HES
Float Collar	7			5074	SSR plug set	7		HES
Insert Float	7				Plug Container	7	1	HES
Stage Tool	7				Centralizers	7		HES

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 ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
1	Mud Flush III (Liquid)	Mud Flush III	10	bbl	8.4			4	
		FRESH WATER							
		41 gal/bbl							

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
2	Lead Cement	ECONOCEM (TM) SYSTEM	140	sack	13.6	1.51		6	7.3
	0.40 %	HALAD(R)-9, 50 LB (100001617)							
	2 %	BENTONITE, BULK (100003682)							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
3	Tail Cement	HALCEM (TM) SYSTEM	90	sack	15.6	1.18		5	5.2
	0.40 %	HALAD(R)-9, 50 LB (100001617)							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
4	Displacement	Displacement	194	bbl	8.33			7	
Cement Left In Pipe	Amount	84.17ft			Reason			Shoe Joint	
Mix Water:	pH ##	Mix Water: ## ppm			Mix Water Temperature: ## °F °C				
		Chloride:							
Cement Temperature:	## °F °C	Plug Displaced by: ## lb/gal kg/m3 XXXX			Disp. Temperature: ## °F °C				
Plug Bumped?	Yes	Bump Pressure: 1100 psi			Floats Held? Yes				
Returns:	1 bbl	Returns Density: ## lb/gal kg/m3			Returns Temperature: ## °F °C				
Comment									

1.5 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	DH Density (ppg)	Recirc Density (ppg)	Comments
Event	1	Call Out	Call Out	12/8/2014	21:00:00	USER					CALLED OUT BY ARS, OKC
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	12/8/2014	22:00:00	USER					DISCUSSED ROUTE TO LOCATION AND SAFE DRIVING
Event	3	Depart Home for Location	Depart Home for Location	12/8/2014	22:30:00	USER					DEPARTED BLACKWELL
Event	4	Arrive At Loc	Arrive At Loc	12/9/2014	01:00:00	USER					ARRIVE AT LOCATION REQUESTED BY 0300
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	12/9/2014	06:00:00	USER					DISCUSSED RIG UP PROCEDURES AND SAFETY
Event	6	Rig-Up Equipment	Rig-Up Equipment	12/9/2014	06:15:00	USER					RIG UP EQUIPMENT
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	12/9/2014	07:30:00	USER	0.00	3.00	-1.71	0.00	DISCUSSED SAFETY, NEAREST HOSPITAL AND JOB PROCEDURES
Event	8	Prime Pumps	Prime Pumps	12/9/2014	07:51:24	COM4	0.00	5.00	-1.70	0.00	PRIMED PUMPS
Event	9	Test Lines	Test Lines	12/9/2014	08:35:52	COM4	0.00	63.00	6.12	8.40	TESTED LINES TO 3000 PSI
Event	10	Drop Bottom Plug	Drop Bottom Plug	12/9/2014	08:35:53	USER	0.00	63.00	6.13	8.40	DROPPED BOTTOM PLUG
Event	11	Pump Spacer 1	Pump Spacer 1	12/9/2014	08:39:26	COM4	0.00	-13.00	8.27	8.34	PUMPED 10 BBLS MUD FLUSH III @ 3.5 BBLS/350 PSI
Event	12	Pump Lead Cement	Pump Lead Cement	12/9/2014	08:43:17	COM4	4.40	365.00	13.33	13.55	PUMPED 38 BBLS LEAD CEMENT @ 13.6 4.5 BBLS / 400 PSI
Event	13	Pump Tail Cement	Pump Tail Cement	12/9/2014	08:49:31	COM4	3.00	107.00	14.32	15.45	PUMPED TAIL CEMENT @ 15.6
Event	14	Shutdown	Shutdown	12/9/2014	08:49:32	USER	3.00	106.00	14.37	15.48	SHUTDOWN
Event	15	Drop Top Plug	Drop Top Plug	12/9/2014	08:49:33	USER	3.00	105.00	14.37	15.51	DROPPED TOP PLUG
Event	16	Pump Displacement	Pump Displacement	12/9/2014	08:56:52	COM4	1.30	-67.00	15.16	8.42	PUMPED 194 BBLS FRESH WATER DISPLACEMENT @ 7BBLS

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 Case 2

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	DH Density (ppg)	Recirc Density (ppg)	Comments
											/ 150 PSI
Event	17	Displ Reached Cmmt	Displ Reached Cmmt	12/9/2014	09:01:49	COM4	7.00	252.00	7.88	8.42	DISPLACEMENT REACHED CEMENT 350 PSI/ 7BBL
Event	18	Bump Plug	Bump Plug	12/9/2014	09:32:31	COM4	0.00	976.00	7.28	8.43	BUMPED PLUG @ 1100 PSI 500 OVER PSI
Event	19	Check Floats	Check Floats	12/9/2014	09:32:32	USER	0.00	975.00	7.27	8.43	1 BBL RETURN FLOATS HELD
Event	20	End Job	End Job	12/9/2014	09:33:49	COM4	0.00	-77.00	7.21	8.43	JOB ACTIVITIES COMPLETE
Event	21	Post-Job Safety Meeting (Pre Rig-Down)	Post-Job Safety Meeting (Pre Rig-Down)	12/9/2014	09:50:00	USER	0.00	-79.00	-1.35	8.42	DISCUSSED RIG DOWN PROCEDURES AND SAFETY
Event	22	Rig-Down Equipment	Rig-Down Equipment	12/9/2014	10:00:00	USER					RIG DOWN EQUIPMENT
Event	23	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	12/9/2014	11:00:00	USER					DISCUSSED ROUTE HOME AND SAFE DRIVING
Event	24	Depart Location	Depart Location	12/9/2014	11:30:00	USER					DEPARTED LOCATION
Event	25	Arrive at Home	Arrive at Home	12/9/2014	13:00:00	USER					ARRIVED IN BLACKWELL