

30-015-40817

Archer

Archer Directional Drilling Services.
911 Regional Park Drive
Houston, Texas 77060
Tel: 281-934-9600
Fax: 281-951-2101

MWD Survey Certification

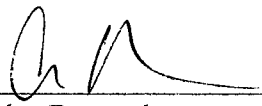
NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 12 2014

State of New Mexico
County of Eddy

RECEIVED

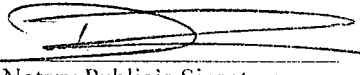
I, Amador Baggerly, certify that; I am employed by Archer Directional Drilling Services; that I did on the day(s) of 03/01/13 through 03/15/13, conduct or supervise the taking of MWD survey from a depth of 447 feet to a depth of 10520 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Archer Directional Drilling Services; that I am authorized and qualified to make this report; that these surveys were conducted at the request of Mack Energy Corporation for the Derrick Fee #1 (API # 30-015-40817) Well located in Eddy County, New Mexico; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Archer Directional Drilling Services.



Amador Baggerly
MWD Coordinator

State of Texas
County of Harris

Before me, a notary public, on this day personally appeared Amador Baggerly, on this 4 day of April, 2013, known to me to be the person whose name is subscribed to the foregoing document and, being by me first duly sworn, declared that the statement therein contained are true and correct.



Notary Public's Signature



SCANNED



Company: Mack Energy Corporation

Job Number: 04090-433-21

Calculation Method

Minimum Curvature

Well: Derrick Fee #1

Mag Decl.: 7.60

Proposed Azimuth

89.7

Location: Eddy County, New Mexico

Dir Driller: Steve Gray

Depth Reference

KBG

Rig: Silver Oak 6

MWD Eng: Jared Jackson

Tie Into: Assumed Vertical

Job Date: 03/01/13 - 03/15/13

Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)	Distance (ft)	Direction Azimuth			
Tie In	0.00	0	0	0	0	0	0.00 0	0.00 0					
1	447	1.4	62.0	447	446.96	4.84	2.56 N	4.82 E	5.46	62.00	0.31	0.31	13.87
2	534	1.1	66.0	87	533.93	6.54	3.40 N	6.52 E	7.36	62.45	0.36	-0.34	4.60
3	682	1.1	73.0	148	681.91	9.20	4.40 N	9.18 E	10.18	64.41	0.09	0.00	4.73
4	863	0.7	99.8	181	862.89	11.96	4.72 N	11.93 E	12.83	68.43	0.32	-0.22	14.81
5	1050	0.7	135.6	187	1049.87	13.88	3.70 N	13.86 E	14.34	75.03	0.23	0.00	19.14
6	1237	2.0	120.6	187	1236.82	17.47	1.23 N	17.46 E	17.51	85.98	0.71	0.70	-8.02
7	1426	1.5	94.2	189	1425.73	22.77	0.63 S	22.77 E	22.78	91.59	0.50	-0.26	-13.97
8	1611	2.7	96.2	185	1610.60	29.51	1.28 S	29.52 E	29.54	92.48	0.65	0.65	1.08
9	1798	1.5	49.5	187	1797.49	35.76	0.17 S	35.76 E	35.76	90.27	1.07	-0.64	-24.97
10	1954	1.1	29.9	156	1953.45	38.07	2.46 N	38.06 E	38.13	86.31	0.38	-0.26	-12.56
11	2047	1.1	41.2	93	2046.43	39.11	3.90 N	39.09 E	39.28	84.30	0.23	0.00	12.15
12	2140	3.1	85.7	93	2139.37	42.21	4.76 N	42.18 E	42.45	83.56	2.62	2.15	47.85
13	2233	4.4	89.6	93	2232.17	48.29	4.98 N	48.26 E	48.52	84.11	1.42	1.40	4.19
14	2327	7.2	95.8	94	2325.68	57.75	4.41 N	57.73 E	57.90	85.63	3.05	2.98	6.60
15	2421	9.8	95.1	94	2418.64	71.58	3.10 N	71.56 E	71.63	87.52	2.77	2.77	-0.74
16	2514	6.7	85.6	93	2510.67	84.87	2.81 N	84.86 E	84.90	88.10	3.63	-3.33	-10.22
17	2608	7.4	86.3	94	2603.96	96.38	3.62 N	96.36 E	96.43	87.85	0.75	0.74	0.74
18	2701	6.0	90.5	93	2696.32	107.22	3.97 N	107.20 E	107.27	87.88	1.59	-1.51	4.52
19	2795	6.0	89.4	94	2789.80	117.05	3.98 N	117.03 E	117.09	88.05	0.12	0.00	-1.17
20	2888	6.0	89.9	93	2882.29	126.77	4.04 N	126.75 E	126.81	88.18	0.06	0.00	0.54
21	2981	6.1	89.7	93	2974.78	136.57	4.07 N	136.55 E	136.61	88.29	0.11	0.11	-0.22
22	3075	6.1	88.6	94	3068.24	146.56	4.22 N	146.54 E	146.60	88.35	0.12	0.00	-1.17
23	3168	6.2	85.7	93	3160.71	156.51	4.72 N	156.48 E	156.56	88.27	0.35	0.11	-3.12
24	3262	6.2	85.6	94	3254.16	166.63	5.49 N	166.61 E	166.70	88.11	0.01	0.00	-0.11
25	3355	6.0	84.5	93	3346.63	176.48	6.34 N	176.45 E	176.57	87.94	0.25	-0.22	-1.18
26	3449	6.0	97.7	94	3440.12	186.24	6.15 N	186.21 E	186.31	88.11	1.46	0.00	14.04
27	3542	6.0	98.0	93	3532.61	195.87	4.82 N	195.84 E	195.90	88.59	0.03	0.00	0.32
28	3635	5.7	84.9	93	3625.13	205.28	4.56 N	205.26 E	205.31	88.73	1.47	-0.32	-14.09
29	3728	5.9	82.2	93	3717.66	214.62	5.62 N	214.59 E	214.66	88.50	0.36	0.22	-2.90
30	3822	5.6	85.6	94	3811.18	223.98	6.62 N	223.95 E	224.05	88.31	0.48	-0.32	3.62
31	3915	4.8	93.3	93	3903.80	232.39	6.75 N	232.36 E	232.46	88.34	1.14	-0.86	8.28
32	4008	4.8	89.8	93	3996.48	240.17	6.54 N	240.14 E	240.22	88.44	0.31	0.00	-3.76
33	4102	4.5	91.3	94	4090.17	247.79	6.47 N	247.75 E	247.84	88.50	0.34	-0.32	1.60
34	4195	5.2	88.4	93	4182.83	255.65	6.50 N	255.61 E	255.70	88.54	0.80	0.75	-3.12
35	4289	5.4	88.5	94	4276.43	264.33	6.74 N	264.29 E	264.38	88.54	0.21	0.21	0.11
36	4382	5.2	86.3	93	4369.03	272.91	7.12 N	272.87 E	272.97	88.50	0.31	-0.22	-2.37
37	4475	5.0	84.5	93	4461.66	281.15	7.78 N	281.11 E	281.22	88.41	0.28	-0.22	-1.94

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Steve Gray

Depth Reference

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Rig: Silver Oak 6

MWD Eng:

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Tie Into: Assumed Vertical

Job Date: 03/01/13 - 03/15/13

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38	4569	4.8	86.1	94	4555.32	289.16	8.44 N	289.12 E	289.24	88.33	0.26	-0.21	1.70
39	4662	5.5	90.7	93	4647.95	297.50	8.65 N	297.45 E	297.58	88.33	0.87	0.75	4.95
40	4756	5.4	88.9	94	4741.52	306.42	8.68 N	306.38 E	306.50	88.38	0.21	-0.11	-1.91
41	4849	5.4	90.2	93	4834.11	315.18	8.75 N	315.13 E	315.25	88.41	0.13	0.00	1.40
42	4943	4.8	97.6	94	4927.74	323.49	8.22 N	323.45 E	323.56	88.54	0.95	-0.64	7.87
43	5036	3.3	91.5	93	5020.50	330.02	7.63 N	329.99 E	330.08	88.68	1.68	-1.61	-6.56
44	5129	1.5	103.2	93	5113.42	333.88	7.28 N	333.85 E	333.93	88.75	2.00	-1.94	12.58
45	5254	1.5	109.4	125	5238.37	337.01	6.37 N	336.98 E	337.04	88.92	0.13	0.00	4.96
46	5440	1.3	192.0	186	5424.33	338.86	3.49 N	338.84 E	338.86	89.41	1.00	-0.11	44.41
47	5627	2.0	191.6	187	5611.26	337.73	1.78 S	337.74 E	337.75	90.30	0.37	0.37	-0.21
48	5814	1.2	229.9	187	5798.19	335.55	6.24 S	335.59 E	335.65	91.06	0.69	-0.43	20.48
49	6001	0.6	254.2	187	5985.16	333.10	7.76 S	333.15 E	333.24	91.33	0.37	-0.32	12.99
50	6200	0.8	246.7	199	6184.15	330.82	8.60 S	330.87 E	330.98	91.49	0.11	0.10	-3.77
51	6386	1.3	256.0	186	6370.12	327.57	9.62 S	327.63 E	327.77	91.68	0.28	0.27	5.00
52	6573	1.2	248.9	187	6557.07	323.68	10.84 S	323.75 E	323.93	91.92	0.10	-0.05	-3.80
53	6760	0.8	246.7	187	6744.04	320.65	12.06 S	320.72 E	320.95	92.15	0.21	-0.21	-1.18
54	6946	0.9	178.6	186	6930.03	319.48	14.03 S	319.56 E	319.87	92.51	0.51	0.05	-36.61
55	7133	1.1	203.2	187	7117.00	318.79	17.15 S	318.89 E	319.35	93.08	0.25	0.11	13.16
56	7320	1.2	212.8	187	7303.96	317.01	20.45 S	317.13 E	317.78	93.69	0.12	0.05	5.13
57	7507	0.6	188.8	187	7490.94	315.78	23.06 S	315.91 E	316.76	94.18	0.37	-0.32	-12.83
58	7693	0.8	182.4	186	7676.92	315.56	25.32 S	315.71 E	316.73	94.59	0.12	0.11	-3.44
59	7880	2.0	152.4	187	7863.87	317.00	29.52 S	317.17 E	318.54	95.32	0.73	0.64	-16.04
60	8067	0.7	268.2	187	8050.83	317.35	32.45 S	317.54 E	319.19	95.83	1.28	-0.70	61.93
61	8253	1.5	166.4	186	8236.81	316.78	34.85 S	316.98 E	318.89	96.27	0.96	0.43	-54.73
62	8439	1.2	167.1	186	8422.75	317.76	39.11 S	317.98 E	320.38	97.01	0.16	-0.16	0.38
63	8625	1.8	154.3	186	8608.69	319.44	43.64 S	319.68 E	322.65	97.77	0.37	0.32	-6.88
64	8812	0.6	140.2	187	8795.65	321.32	47.04 S	321.58 E	325.01	98.32	0.66	-0.64	-7.54
65	9000	0.5	224.6	188	8983.64	321.36	48.38 S	321.64 E	325.26	98.55	0.39	-0.05	44.89
66	9186	0.9	210.5	186	9169.63	320.04	50.22 S	320.33 E	324.24	98.91	0.23	0.22	-7.58
67	9373	1.2	117.2	187	9356.60	321.03	52.38 S	321.32 E	325.57	99.26	0.82	0.16	-49.89
68	9560	1.0	91.1	187	9543.57	324.39	53.31 S	324.70 E	329.04	99.32	0.29	-0.11	-13.96
69	9747	0.2	191.1	187	9730.56	325.96	53.66 S	326.27 E	330.65	99.34	0.56	-0.43	53.48
70	9934	1.2	290.9	187	9917.55	324.07	53.28 S	324.37 E	328.72	99.33	0.67	0.53	53.37
71	10121	1.8	260.2	187	10104.49	319.35	53.08 S	319.65 E	324.03	99.43	0.53	0.32	-16.42
72	10308	1.1	275.3	187	10291.43	314.67	53.41 S	314.97 E	319.47	99.63	0.42	-0.37	8.07
73	10470	1.1	284.4	162	10453.40	311.61	52.88 S	311.91 E	316.37	99.62	0.11	0.00	5.62
Proj.	10520	1.1	287.2	50	10503.39	310.69	52.62 S	310.99 E	315.41	99.60	0.11	0.00	5.62

SCANNED