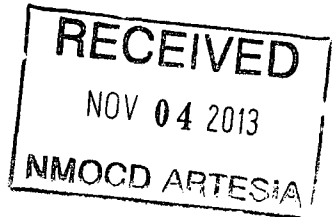




PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288



September 12, 2013

Mack Energy Corporation
PO Box 960
Artesia, NM 88211-0960

30-015-41098

RE: Razorback Federal #7
1360' FNL & 1320' FWL
Sec. 3, T18S, R31E
Eddy County, New Mexico

Dear Sir,

The attached is the Deviation Survey for the above captioned well.

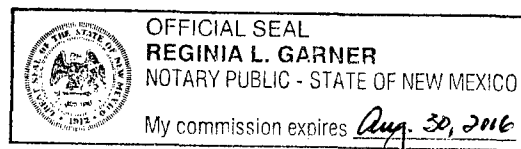
Very truly yours,

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 12th day of September, 2013.

Notary Public



SCANNED

RAZORBACK FEDERAL #7

#	Date	Depth	Deviation	Direction
9/2/2013		243	1.20	
9/2/2013		331	1.10	221.00
9/2/2013		476	0.80	
9/2/2013		652	0.70	221.00
9/2/2013		740	0.60	282.00
9/4/2013		909	1.20	321.30
9/4/2013		1022	0.30	285.80
9/4/2013		1115	1.30	160.80
9/4/2013		1208	2.20	165.00
9/4/2013		1300	3.00	154.70
9/5/2013		1393	3.40	161.80
9/5/2013		1486	4.10	136.90
9/5/2013		1579	4.80	133.30
9/5/2013		1670	5.80	125.90
9/5/2013		1765	5.20	128.50
9/5/2013		1858	4.40	126.00
9/5/2013		1948	4.70	115.40
9/5/2013		2019	4.80	118.20
9/6/2013		2097	4.40	117.60
9/6/2013		2159	4.50	109.10
9/7/2013		2218	4.20	120.50
9/7/2013		2404	5.60	148.70
9/7/2013		2590	14.10	147.20
9/7/2013		2276	26.80	140.30
9/7/2013		2934	32.60	134.90
9/7/2013		3151	22.40	121.40
9/8/2013		3333	7.40	106.30
9/8/2013		3519	10.10	157.10
9/8/2013		3704	6.30	114.70
9/8/2013		3890	4.20	133.10
9/8/2013		4076	4.00	133.10
9/8/2013		4261	4.50	108.10
9/8/2013		4450	2.90	90.40
9/8/2013		4636	1.50	326.40
9/8/2013		4822	1.40	312.70
9/9/2013		5004	2.90	165.10
9/9/2013		5191	1.90	109.60
9/9/2013		5377	1.00	67.40
9/9/2013		5560	1.10	397.60

SCANNED

Job Number: 00113

State/Country: NM / USA

Company: Mack Energy

Declination: ☐

Lease/Well: Razorback Federal #7

Grid: ☐

Location: Artesia, NM

File name: C:\WINSERVE\FEDERAL7.SVY

Rig Name: Silveroak Drilling Rig #6

Date/Time: 09-Sep-13 / 08:18

RKB: ☐

Curve Name: Razorback Federal 7

G.L. or M.S.L.: ☐**Razorback Federal 7**

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 130.90
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

RECEIVED

NOV 04 2013

NMOCD ARTESIA

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
197.00	1.10	222.60	196.99	-1.39	-1.28	-.06	1.89	222.60	.56
243.00	1.20	218.60	242.98	-2.09	-1.88	-.05	2.81	221.92	.28
331.00	1.10	220.60	330.96	-3.45	-3.00	-.01	4.58	221.01	.12
476.00	.80	219.60	475.94	-5.29	-4.55	.02	6.98	220.72	.21
652.00	.70	220.60	651.93	-7.05	-6.04	.06	9.29	220.56	.06
Gyro Survey's (Tie On)									
740.00	.60	289.60	739.92	-7.31	-6.82	-.37	10.00	223.03	.84
Rolfson Directional (Survey's)									
930.00	.90	326.00	929.91	-5.74	-8.59	-2.74	10.33	236.27	.29
1115.00	1.30	160.80	1114.89	-6.51	-8.72	-2.32	10.88	233.22	1.18
1300.00	3.00	154.70	1299.76	-12.87	-5.96	3.93	14.19	204.83	.93
1485.00	4.10	136.90	1484.40	-22.08	.63	14.93	22.09	178.36	.83
1670.00	5.80	125.90	1668.71	-32.39	12.72	30.83	34.80	158.55	1.05
1856.00	4.40	126.00	1853.97	-42.10	26.11	47.30	49.54	148.19	.75
TD @ 2065' "Casing Point"									
2021.00	4.80	118.20	2018.44	-49.08	37.31	60.34	61.65	142.75	.45
2218.00	4.20	120.50	2214.83	-56.64	50.79	75.47	76.08	138.11	.32
2404.00	5.60	148.70	2400.17	-67.85	61.38	90.82	91.49	137.87	1.48
2589.00	14.10	147.20	2582.28	-94.55	78.31	121.10	122.77	140.37	4.60
2777.00	26.80	140.30	2758.09	-146.63	117.95	185.16	188.18	141.19	6.86
2962.00	32.80	134.20	2918.60	-213.73	180.59	276.44	279.81	139.80	3.63
3148.00	22.40	121.40	3083.35	-267.51	247.19	361.99	364.23	137.26	6.41
3333.00	7.40	106.30	3261.67	-289.35	288.97	407.87	408.93	135.04	8.31
3519.00	10.10	152.10	3445.69	-307.15	308.12	434.00	435.06	134.91	3.89
3704.00	6.30	114.70	3628.89	-325.75	324.95	458.89	460.11	135.07	3.44

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
3890.00	4.20	133.10	3814.11	-334.67	339.20	475.50	476.50	134.61	1.43
4075.00	4.00	133.10	3998.64	-343.70	348.86	488.72	489.73	134.57	.11
4261.00	4.50	108.10	4184.14	-350.40	360.53	501.93	502.76	134.18	1.02
4446.00	2.20	73.50	4368.83	-351.65	370.83	510.54	511.05	133.48	1.60
4632.00	1.50	326.40	4554.77	-348.61	372.91	510.11	510.48	133.07	1.62
4818.00	1.10	312.60	4740.73	-345.37	370.25	505.98	506.33	133.01	.27
5003.00	2.90	165.00	4925.66	-348.69	370.15	508.08	508.53	133.29	2.09
5188.00	1.90	109.60	5110.52	-354.24	374.25	514.82	515.32	133.43	1.30
5374.00	1.00	67.40	5296.46	-354.65	378.66	518.41	518.81	133.13	.72
5560.00	1.10	347.60	5482.44	-352.28	379.77	517.71	518.01	132.85	.73
Bit Projection									
5607.00	1.10	347.60	5529.43	-351.40	379.58	516.98	517.27	132.79	.00