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MS Directional Survey Data Certification

MS Directional Job Number: DDMO-171236
Survey Type: MWD
Operating Company: Matador Production Company
Well Name & Number: Leo Thorsness 13-24S-33E AR 211 H
Location: Lea County, NM
API Number: 30-025-43532
Tie In Depth: Surface
Surveyed Depths: 195' – 16,995' MD
Projected TD Survey: 17,045' MD
Dates Performed: 12/09/2017 – 12/31/2017

HOBBS OCD
MAR 13 2018
RECEIVED

I certify that the data is true, correct and complete and within the limitations of the tool set forth by MS Directional; that I am authorized and qualified to make this report and that I have reviewed this report and find it conforms to the principles and procedures as set forth by MS Directional.

Digitally signed by:

MWD Surveyor Name:

Tyler Teague

Date:

02-09-2018

Email:

tteague@msenergyservices.com

Company:	Matador Production Company		
Well Name:	Leo Thorsness 13-24S-33E AR 211H		
Location:	Lea County, NM		
Rig:	Patterson #810	Magnetic Declination:	6.53
Job Number:	DDMO-171236		REFERENCED TO GRID NORTH
API #:	30-025-43532		

Vertical Section Azimuth:	179.55	Proposed Direction:	179.55
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Survey Calculation Method:	Minimum Curvature
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PTB:	MD	INC	AZM	TVD	N/S	E/W	VS
	17,045	85.4	182.3	12383.27	-4490.22	372.21	4493

#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance	Azm	DLS/ 100	BUR/ 100'
TIE IN	0	0.00	0.00	0.00	0.00	0.00			0.00		
1	195	0.30	343.90	195.00	0.49	-0.14	-0.49	0.51	343.90	0.15	0.15
2	330	0.20	178.70	330.00	0.59	-0.23	-0.60	0.64	338.50	0.37	-0.07
3	427	0.30	96.80	427.00	0.40	0.02	-0.39	0.40	3.15	0.35	0.10
4	516	0.90	37.90	515.99	0.92	0.68	-0.91	1.14	36.60	0.89	0.67
5	611	2.30	21.20	610.95	3.29	1.83	-3.27	3.76	29.12	1.54	1.47
6	703	3.70	22.60	702.83	7.75	3.64	-7.72	8.56	25.16	1.52	1.52
7	794	4.20	15.10	793.61	13.68	5.64	-13.63	14.79	22.40	0.79	0.55
8	886	4.30	15.30	885.36	20.25	7.42	-20.20	21.57	20.13	0.11	0.11
9	981	4.30	18.50	980.09	27.07	9.49	-26.99	28.68	19.33	0.25	0.00
10	1,076	6.20	26.00	1074.69	35.06	12.87	-34.95	37.34	20.16	2.12	2.00
11	1,171	5.90	27.40	1169.16	44.00	17.37	-43.86	47.31	21.54	0.35	-0.32
12	1,266	6.10	29.10	1263.64	52.75	22.07	-52.57	57.18	22.70	0.28	0.21
13	1,320	6.30	26.70	1317.32	57.90	24.80	-57.70	62.99	23.18	0.61	0.37
14	1,456	6.20	29.10	1452.51	70.98	31.72	-70.73	77.75	24.08	0.21	-0.07
15	1,551	6.40	29.20	1546.94	80.09	36.80	-79.80	88.14	24.68	0.21	0.21
16	1,646	6.00	28.20	1641.38	89.09	41.73	-88.76	98.38	25.10	0.44	-0.42
17	1,742	4.80	29.60	1736.96	97.00	46.08	-96.64	107.39	25.41	1.26	-1.25
18	1,837	5.60	30.10	1831.57	104.47	50.37	-104.07	115.98	25.74	0.84	0.84
19	1,932	4.90	31.70	1926.17	111.93	54.83	-111.50	124.64	26.10	0.75	-0.74
20	2,027	3.20	29.10	2020.93	117.70	58.25	-117.24	131.32	26.33	1.80	-1.79
21	2,122	3.10	31.10	2115.78	122.22	60.87	-121.73	136.53	26.47	0.16	-0.11
22	2,217	3.10	27.90	2210.64	126.68	63.39	-126.18	141.66	26.58	0.18	0.00
23	2,310	3.00	26.40	2303.51	131.09	65.65	-130.57	146.61	26.60	0.14	-0.11
24	2,405	3.10	24.80	2398.38	135.65	67.84	-135.11	151.66	26.57	0.14	0.11
25	2,500	3.20	21.20	2493.23	140.45	69.87	-139.90	156.87	26.45	0.23	0.11
26	2,596	3.10	20.90	2589.09	145.37	71.77	-144.80	162.12	26.27	0.11	-0.10
27	2,691	3.00	35.10	2683.96	149.81	74.11	-149.22	167.14	26.32	0.80	-0.11
28	2,786	3.30	42.80	2778.81	153.85	77.40	-153.23	172.22	26.71	0.55	0.32
29	2,881	3.20	42.70	2873.66	157.80	81.06	-157.16	177.40	27.19	0.11	-0.11
30	2,974	3.20	44.10	2966.51	161.57	84.62	-160.90	182.39	27.64	0.08	0.00
31	3,069	3.30	44.30	3061.36	165.43	88.38	-164.73	187.56	28.11	0.11	0.11
32	3,165	3.20	46.60	3157.21	169.25	92.25	-168.52	192.76	28.59	0.17	-0.10
33	3,260	3.30	44.20	3252.05	173.03	96.09	-172.27	197.92	29.04	0.18	0.11

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Company:		Matador Production Company												
Well Name:		Leo Thorsness 13-24S-33E AR 211H												
Location:		Lea County, NM												
Rig:		Patterson #810				Magnetic Declination:		6.53		REFERENCED TO GRID NORTH				
Job Number:		DDMO-171236												
API #:		30-025-43532												
Vertical Section Azimuth:			179.55		Proposed Direction:		179.55							
Survey Calculation Method:			Minimum Curvature											
PTB:	MD		INC		AZM		TVD		N/S		E/W		VS	
	17,045		85.4		182.3		12383.27		-4490.22		372.21		4493	
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance		Azm	DLS/ 100	BUR/ 100'		
34	3,355	3.30	44.10	3346.90	176.96	99.90	-176.17	203.21		29.45	0.01	0.00		
35	3,450	3.10	47.20	3441.75	180.67	103.68	-179.85	208.31		29.85	0.28	-0.21		
36	3,545	3.00	50.90	3536.61	183.98	107.50	-183.13	213.08		30.30	0.23	-0.11		
37	3,640	3.00	52.10	3631.48	187.08	111.39	-186.19	217.73		30.77	0.07	0.00		
38	3,735	3.00	54.80	3726.35	190.04	115.38	-189.12	222.32		31.26	0.15	0.00		
39	3,830	2.70	55.90	3821.24	192.72	119.27	-191.78	226.64		31.75	0.32	-0.32		
40	4,019	4.00	36.90	4009.91	200.49	126.91	-199.49	237.28		32.33	0.90	0.69		
41	4,209	3.80	36.50	4199.47	210.85	134.63	-209.79	250.17		32.56	0.11	-0.11		
42	4,400	3.80	39.10	4390.06	220.85	142.39	-219.73	262.77		32.81	0.09	0.00		
43	4,590	4.00	58.50	4579.62	229.20	152.01	-228.00	275.03		33.55	0.70	0.11		
44	4,780	4.10	66.90	4769.15	235.33	163.91	-234.03	286.79		34.86	0.32	0.05		
45	4,970	4.40	76.80	4958.63	239.66	177.25	-238.26	298.08		36.49	0.42	0.16		
46	5,160	4.40	54.70	5148.08	245.53	190.30	-244.03	310.64		37.78	0.89	0.00		
47	5,204	4.40	54.60	5191.95	247.49	193.05	-245.96	313.88		37.96	0.02	0.00		
48	5,353	3.70	53.20	5340.58	253.68	201.56	-252.09	324.00		38.47	0.47	-0.47		
49	5,543	4.00	49.30	5530.15	261.67	211.49	-260.00	336.45		38.95	0.21	0.16		
50	5,733	5.40	43.40	5719.51	272.49	222.66	-270.73	351.89		39.25	0.78	0.74		
51	5,923	4.70	38.70	5908.77	285.06	233.67	-283.22	368.59		39.34	0.43	-0.37		
52	6,113	4.70	40.10	6098.13	297.09	243.55	-295.17	384.16		39.34	0.06	0.00		
53	6,303	4.60	39.10	6287.51	308.96	253.37	-306.96	399.56		39.35	0.07	-0.05		
54	6,494	4.60	40.20	6477.89	320.75	263.15	-318.67	414.88		39.37	0.05	0.00		
55	6,683	4.80	39.50	6666.26	332.64	273.07	-330.48	430.37		39.38	0.11	0.11		
56	6,873	4.50	37.60	6855.63	344.68	282.67	-342.45	445.77		39.36	0.18	-0.16		
57	7,063	5.00	25.50	7044.98	358.06	290.78	-355.76	461.26		39.08	0.59	0.26		
58	7,252	4.80	24.80	7233.29	372.67	297.65	-370.32	476.94		38.61	0.11	-0.11		
59	7,442	4.90	21.70	7422.61	387.43	303.98	-385.03	492.45		38.12	0.15	0.05		
60	7,633	4.60	20.50	7612.96	402.18	309.68	-399.73	507.59		37.60	0.17	-0.16		
61	7,823	4.10	19.90	7802.41	415.70	314.66	-413.22	521.36		37.12	0.26	-0.26		
62	8,013	3.60	26.70	7991.98	427.42	319.65	-424.89	533.73		36.79	0.36	-0.26		
63	8,203	3.10	29.60	8181.66	437.21	324.87	-434.65	544.70		36.61	0.28	-0.26		
64	8,393	3.20	12.40	8371.37	446.86	328.55	-444.27	554.64		36.32	0.50	0.05		
65	8,584	3.80	18.80	8562.02	458.06	331.73	-455.44	565.56		35.91	0.37	0.31		
66	8,774	3.70	23.50	8751.61	469.64	336.20	-466.99	577.58		35.60	0.17	-0.05		
67	8,963	3.00	32.80	8940.29	479.39	341.32	-476.70	588.48		35.45	0.47	-0.37		

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Well Name:		Leo Thorsness 13-24S-33E AR 211H												
Location:		Lea County, NM												
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Job Number:		DDMO-171236												
API #:		30-025-43532												
Vertical Section Azimuth:					179.55		Proposed Direction:		179.55					
Survey Calculation Method:					Minimum Curvature									
PTB:	MD		INC		AZM	TVD	N/S	E/W	VS					
	17,045		85.4		182.3	12383.27	-4490.22	372.21	4493					
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance Azm		DLS/ 100	BUR/ 100'			
68	9,154	1.20	354.80	9131.16	485.58	343.84	-482.87	595.00	35.30	1.14	-0.94			
69	9,344	1.90	329.50	9321.09	490.28	342.06	-487.58	597.81	34.90	0.51	0.37			
70	9,534	1.40	331.00	9511.01	495.02	339.34	-492.34	600.17	34.43	0.26	-0.26			
71	9,724	2.10	309.60	9700.92	499.27	335.53	-496.62	601.54	33.90	0.50	0.37			
72	9,915	1.40	301.30	9891.83	502.72	330.84	-500.10	601.81	33.35	0.39	-0.37			
73	10,105	1.70	84.40	10081.80	504.20	331.66	-501.58	603.50	33.34	1.55	0.16			
74	10,295	0.70	103.10	10271.76	504.21	335.60	-501.56	605.68	33.65	0.56	-0.53			
75	10,485	0.20	91.90	10461.75	503.94	337.06	-501.27	606.27	33.78	0.27	-0.26			
76	10,675	1.00	60.10	10651.74	504.75	338.83	-502.07	607.93	33.87	0.44	0.42			
77	10,865	1.00	132.50	10841.72	504.46	341.49	-501.76	609.17	34.10	0.62	0.00			
78	11,054	1.80	109.00	11030.66	502.38	345.51	-499.65	609.72	34.52	0.51	0.42			
79	11,244	1.60	145.90	11220.59	499.21	349.82	-496.45	609.58	35.02	0.57	-0.11			
80	11,434	0.10	231.80	11410.56	496.91	351.18	-494.14	608.48	35.25	0.84	-0.79			
81	11,619	0.50	65.40	11595.56	497.15	351.78	-494.37	609.02	35.28	0.32	0.22			
82	11,715	0.60	51.00	11691.55	497.64	352.56	-494.85	609.87	35.32	0.18	0.10			
83	11,763	3.70	184.60	11739.52	496.25	352.63	-493.47	608.78	35.40	8.62	6.46			
84	11,810	14.20	165.30	11785.89	489.14	353.97	-486.35	603.78	35.89	22.93	22.34			
85	11,858	17.60	161.00	11832.05	476.58	357.83	-473.76	595.96	36.90	7.49	7.08			
86	11,905	22.60	161.00	11876.18	461.31	363.09	-458.45	587.06	38.21	10.64	10.64			
87	11,953	28.10	161.30	11919.54	441.87	369.72	-438.95	576.14	39.92	11.46	11.46			
88	12,000	32.20	163.40	11960.17	419.38	376.85	-416.40	563.82	41.94	9.01	8.72			
89	12,048	34.80	167.30	12000.20	393.75	383.52	-390.73	549.66	44.25	7.03	5.42			
90	12,095	37.70	171.40	12038.10	366.45	388.61	-363.38	534.14	46.68	8.04	6.17			
91	12,143	41.30	177.10	12075.15	336.10	391.61	-333.01	516.06	49.36	10.64	7.50			
92	12,190	45.00	180.40	12109.44	303.97	392.28	-300.88	496.27	52.23	9.22	7.87			
93	12,237	48.20	184.20	12141.73	269.87	390.88	-266.79	474.99	55.38	8.99	6.81			
94	12,284	53.30	182.70	12171.46	233.55	388.71	-230.49	453.48	59.00	11.13	10.85			
95	12,332	58.10	182.50	12198.50	193.95	386.91	-190.91	432.80	63.38	10.01	10.00			
96	12,379	61.80	183.60	12222.03	153.34	384.74	-150.31	414.17	68.27	8.13	7.87			
97	12,428	66.30	184.90	12243.47	109.41	381.47	-106.41	396.85	74.00	9.49	9.18			
98	12,475	68.90	186.10	12261.38	66.16	377.30	-63.20	383.06	80.05	6.01	5.53			
99	12,523	71.40	185.30	12277.68	21.24	372.82	-18.31	373.42	86.74	5.44	5.21			
100	12,570	74.80	185.10	12291.34	-23.54	368.74	26.43	369.49	93.65	7.25	7.23			

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PTB:	MD		INC		AZM		TVD		N/S		E/W		VS	
	17,045		85.4		182.3		12383.27		-4490.22		372.21		4493	
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance		Azm	DLS/ 100	BUR/ 100'		
101	12,626	76.10	184.90	12305.41	-77.53	364.02	80.39	372.19	102.02	2.35	2.32			
102	12,673	79.00	183.70	12315.54	-123.29	360.58	126.12	381.08	108.88	6.65	6.17			
103	12,720	81.70	183.00	12323.42	-169.55	357.88	172.35	396.01	115.35	5.93	5.74			
104	12,767	84.90	181.50	12328.90	-216.18	356.05	218.97	416.54	121.27	7.51	6.81			
105	12,862	90.00	179.90	12333.12	-311.05	354.89	313.82	471.91	131.23	5.63	5.37			
106	12,955	90.10	179.10	12333.04	-404.04	355.70	406.82	538.31	138.64	0.87	0.11			
107	13,049	87.80	177.10	12334.77	-497.96	358.82	500.77	613.77	144.22	3.24	-2.45			
108	13,144	89.30	178.20	12337.17	-592.85	362.71	595.68	695.00	148.54	1.96	1.58			
109	13,237	91.30	178.20	12336.68	-685.80	365.63	688.65	777.18	151.94	2.15	2.15			
110	13,331	89.60	176.40	12335.94	-779.68	370.06	782.56	863.05	154.61	2.63	-1.81			
111	13,425	90.90	176.90	12335.53	-873.52	375.55	876.44	950.83	156.74	1.48	1.38			
112	13,519	91.70	179.40	12333.40	-967.44	378.59	970.38	1038.88	158.63	2.79	0.85			
113	13,614	92.00	179.30	12330.33	-1062.38	379.66	1065.33	1128.18	160.33	0.33	0.32			
114	13,708	92.80	179.00	12326.40	-1156.29	381.06	1159.24	1217.46	161.76	0.91	0.85			
115	13,802	94.00	181.20	12320.82	-1250.11	380.89	1253.07	1306.85	163.05	2.66	1.28			
116	13,896	91.80	180.20	12316.07	-1343.98	379.75	1346.92	1396.60	164.22	2.57	-2.34			
117	13,990	91.50	180.00	12313.36	-1437.94	379.58	1440.88	1487.20	165.21	0.38	-0.32			
118	14,085	92.00	179.90	12310.46	-1532.90	379.67	1535.83	1579.21	166.09	0.54	0.53			
119	14,179	89.80	180.60	12308.98	-1626.88	379.26	1629.81	1670.50	166.88	2.46	-2.34			
120	14,273	90.00	180.80	12309.15	-1720.87	378.11	1723.79	1761.92	167.61	0.30	0.21			
121	14,368	91.40	181.30	12307.99	-1815.84	376.37	1818.74	1854.44	168.29	1.56	1.47			
122	14,462	89.50	181.50	12307.25	-1909.81	374.07	1912.69	1946.10	168.92	2.03	-2.02			
123	14,557	88.90	181.20	12308.57	-2004.77	371.83	2007.63	2038.96	169.49	0.71	-0.63			
124	14,651	87.80	180.90	12311.28	-2098.72	370.11	2101.56	2131.10	170.00	1.21	-1.17			
125	14,746	87.60	180.80	12315.09	-2193.63	368.70	2196.46	2224.40	170.46	0.24	-0.21			
126	14,839	87.10	180.50	12319.39	-2286.52	367.65	2289.34	2315.89	170.87	0.63	-0.54			
127	14,936	89.80	179.30	12322.02	-2383.48	367.82	2386.29	2411.69	171.23	3.05	2.78			
128	15,028	89.60	179.00	12322.50	-2475.47	369.18	2478.29	2502.84	171.52	0.39	-0.22			
129	15,122	88.90	178.00	12323.73	-2569.42	371.64	2572.26	2596.16	171.77	1.30	-0.74			
130	15,216	91.00	179.70	12323.81	-2663.40	373.53	2666.25	2689.46	172.02	2.87	2.23			
131	15,311	91.10	179.30	12322.07	-2758.38	374.36	2761.23	2783.66	172.27	0.43	0.11			
132	15,404	89.00	179.50	12321.99	-2851.37	375.33	2854.23	2875.96	172.50	2.27	-2.26			
133	15,499	87.40	179.00	12324.97	-2946.31	376.57	2949.17	2970.28	172.72	1.76	-1.68			

V09.04.02

Company:	Matador Production Company		
Well Name:	Leo Thorsness 13-24S-33E AR 211H		
Location:	Lea County, NM		
Rig:	Patterson #810	Magnetic Declination:	6.53
Job Number:	DDMO-171236		
API #:	30-025-43532		

REFERENCED TO GRID NORTH

Vertical Section Azimuth:	179.55	Proposed Direction:	179.55
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Survey Calculation Method:	Minimum Curvature
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PTB:	MD	INC	AZM	TVD	N/S	E/W	VS				
	17,045	85.4	182.3	12383.27	-4490.22	372.21	4493				
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance	Azm	DLS/ 100	BUR/ 100'
134	15,593	86.80	179.50	12329.73	-3040.18	377.80	3043.05	3063.56	172.92	0.83	-0.64
135	15,687	86.90	178.10	12334.89	-3134.01	379.77	3136.90	3156.94	173.09	1.49	0.11
136	15,781	88.80	178.10	12338.42	-3227.89	382.88	3230.80	3250.52	173.24	2.02	2.02
137	15,875	89.20	178.60	12340.06	-3321.84	385.59	3324.76	3344.14	173.38	0.68	0.43
138	15,969	88.10	178.60	12342.28	-3415.78	387.89	3418.72	3437.74	173.52	1.17	-1.17
139	16,063	86.90	178.20	12346.38	-3509.65	390.51	3512.61	3531.31	173.65	1.35	-1.28
140	16,157	85.70	178.40	12352.44	-3603.42	393.29	3606.39	3624.81	173.77	1.29	-1.28
141	16,251	86.90	179.10	12358.51	-3697.19	395.34	3700.19	3718.27	173.90	1.48	1.28
142	16,345	88.30	180.50	12362.44	-3791.11	395.66	3794.10	3811.70	174.04	2.11	1.49
143	16,440	88.50	181.10	12365.10	-3886.06	394.34	3889.04	3906.02	174.21	0.67	0.21
144	16,534	88.30	181.90	12367.72	-3979.99	391.88	3982.95	3999.24	174.38	0.88	-0.21
145	16,629	89.50	181.60	12369.55	-4074.93	388.98	4077.86	4093.45	174.55	1.30	1.26
146	16,722	89.30	182.40	12370.52	-4167.86	385.73	4170.77	4185.68	174.71	0.89	-0.22
147	16,815	89.30	182.60	12371.66	-4260.77	381.68	4263.64	4277.83	174.88	0.22	0.00
148	16,910	87.70	182.30	12374.14	-4355.65	377.62	4358.48	4371.98	175.05	1.71	-1.68
149	16,995	85.40	182.30	12379.26	-4440.42	374.21	4443.22	4456.16	175.18	2.71	-2.71
PTB:	17,045	85.40	182.30	12383.27	-4490.22	372.21	4493.00	4505.62	175.26	0.00	0.00