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MS Directional Survey Data Certification

MS Directional Job Number: MSMO-68804
Survey Type: MWD
Operating Company: Matador Production Company
Well Name & Number: Leo Thorsness 13-24-33 #221H
Location: Lea County, NM
API Number: 30-025-46154
Tie In Depth: Surface
Surveyed Depths: 135' – 17,555' MD
Projected TD Survey: 17,614' MD
Dates Performed: 08/11/2019 – 09/22/2019

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:

A handwritten signature in black ink, appearing to read "Nich Barnes", written over a horizontal line.

MWD Surveyor Name: Nicholas Barnes

Date: 10-24-2019

Email: Nicholas.Barnes@msdir.com

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V09.04.02

Company:	Matador Production Company		
Well Name:	Leo Thorsness 13-24-33 #221H		
Location:	Lea County, NM		
Rig:	Patterson #282	Magnetic Declination:	6.19
Job Number:	MSMO-68804		
API #:	30-025-46154		
Vertical Section Azimuth:	179.55	Proposed Direction:	179.55
Survey Calculation Method:	Minimum Curvature		
PTB:	MD	INC	AZM
	17,614	86.5	175.8

REFERENCED TO GRID NORTH

#	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	135	0.80	84.70	135.00	0.09	0.94	-0.08	0.94	84.70	0.59	0.59
2	318	0.90	334.90	317.98	1.51	1.60	-1.49	2.20	46.74	0.76	0.05
3	506	0.90	324.50	505.96	4.05	0.12	-4.04	4.05	1.66	0.09	0.00
4	691	0.80	326.80	690.94	6.31	-1.43	-6.32	6.47	347.20	0.06	-0.05
5	877	0.80	313.70	876.92	8.29	-3.08	-8.32	8.85	339.60	0.10	0.00
6	1,066	0.90	276.20	1065.90	9.36	-5.51	-9.41	10.87	329.51	0.29	0.05
7	1,255	2.70	240.00	1254.81	7.30	-10.84	-7.38	13.07	303.94	1.08	0.95
8	1,293	3.30	238.50	1292.75	6.28	-12.55	-6.38	14.04	296.58	1.59	1.58
9	1,444	1.40	239.80	1443.62	3.08	-17.85	-3.22	18.12	279.79	1.26	-1.26
10	1,539	0.80	47.30	1538.61	2.95	-18.37	-3.09	18.60	279.12	2.30	-0.63
11	1,727	2.80	51.80	1726.51	6.68	-13.79	-6.79	15.33	295.83	1.07	1.06
12	1,916	3.40	49.10	1915.23	13.20	-5.93	-13.25	14.47	335.81	0.33	0.32
13	2,105	6.00	61.10	2103.59	21.65	6.96	-21.59	22.74	17.81	1.46	1.38
14	2,293	5.50	60.60	2290.64	30.82	23.41	-30.63	38.70	37.22	0.27	-0.27
15	2,482	5.30	57.90	2478.80	39.90	38.69	-39.60	55.58	44.12	0.17	-0.11
16	2,669	5.00	56.50	2665.05	48.99	52.80	-48.57	72.03	47.15	0.17	-0.16
17	2,857	4.60	52.90	2852.39	58.06	65.65	-57.54	87.64	48.51	0.27	-0.21
18	3,045	4.50	49.50	3039.80	67.40	77.27	-66.79	102.53	48.90	0.15	-0.05
19	3,234	5.10	54.60	3228.13	77.08	89.76	-76.37	118.31	49.35	0.39	0.32
20	3,423	5.30	56.20	3416.35	86.80	103.86	-85.98	135.35	50.11	0.13	0.11
21	3,611	5.00	55.50	3603.60	96.27	117.82	-95.34	152.15	50.75	0.16	-0.16
22	3,800	4.60	56.00	3791.93	105.17	130.89	-104.14	167.91	51.22	0.21	-0.21
23	3,988	5.00	56.20	3979.27	113.95	143.95	-112.81	183.59	51.64	0.21	0.21
24	4,177	5.00	59.90	4167.55	122.66	157.92	-121.42	199.96	52.16	0.17	0.00
25	4,366	4.60	59.00	4355.89	130.69	171.54	-129.34	215.66	52.70	0.22	-0.21
26	4,555	6.90	66.90	4543.93	139.05	188.49	-137.57	234.23	53.58	1.28	1.22
27	4,743	6.20	72.70	4730.70	146.50	208.57	-144.86	254.88	54.91	0.51	-0.37
28	4,933	6.30	78.90	4919.58	151.56	228.59	-149.76	274.27	56.45	0.36	0.05
29	5,121	5.80	78.60	5106.53	155.42	248.03	-153.47	292.70	57.93	0.27	-0.27
30	5,244	5.20	77.80	5228.96	157.83	259.57	-155.79	303.78	58.70	0.49	-0.49
31	5,399	6.10	54.50	5383.23	164.10	273.14	-161.95	318.64	59.00	1.58	0.58
32	5,588	6.60	57.30	5571.07	175.80	290.45	-173.51	339.51	58.82	0.31	0.26
33	5,777	5.20	43.50	5759.07	187.88	305.49	-185.47	358.64	58.41	1.05	-0.74

V09.04.02

Company:	Matador Production Company		
Well Name:	Leo Thorsness 13-24-33 #221H		
Location:	Lea County, NM		
Rig:	Patterson #282	Magnetic Declination:	6.19
Job Number:	MSMO-68804		
API #:	30-025-46154		
Vertical Section Azimuth:	179.55	Proposed Direction:	179.55
Survey Calculation Method:	Minimum Curvature		
PTB:	MD	INC	AZM
	17,614	86.5	175.8
	TVD	N/S	E/W
	12871.31	-4668.61	900.36
	VS	4675.54	

#	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	5,965	5.10	41.70	5946.31	200.30	316.91	-197.80	374.91	57.71	0.10	-0.05
35	6,154	4.80	45.60	6134.61	212.10	328.15	-209.52	390.73	57.12	0.24	-0.16
36	6,342	4.80	44.40	6321.95	223.23	339.28	-220.55	406.13	56.66	0.05	0.00
37	6,531	4.70	44.10	6510.30	234.44	350.20	-231.68	421.42	56.20	0.05	-0.05
38	6,720	4.80	39.10	6698.65	246.13	360.57	-243.29	436.57	55.68	0.23	0.05
39	6,908	3.60	66.10	6886.16	254.63	370.93	-251.71	449.92	55.53	1.21	-0.64
40	7,096	3.60	69.00	7073.79	259.14	381.84	-256.13	461.47	55.84	0.10	0.00
41	7,284	3.60	66.70	7261.42	263.59	392.77	-260.49	473.02	56.13	0.08	0.00
42	7,473	4.60	57.10	7449.94	270.05	404.58	-266.86	486.43	56.28	0.64	0.53
43	7,660	4.00	62.00	7636.41	277.19	416.64	-273.90	500.42	56.36	0.38	-0.32
44	7,849	5.10	51.60	7824.81	285.50	429.04	-282.12	515.35	56.36	0.73	0.58
45	8,037	5.00	51.40	8012.08	295.80	441.99	-292.32	531.84	56.21	0.05	-0.05
46	8,226	4.20	57.00	8200.47	304.71	454.23	-301.13	546.97	56.15	0.48	-0.42
47	8,413	5.00	51.80	8386.87	313.48	466.38	-309.80	561.94	56.09	0.48	0.43
48	8,600	4.70	53.80	8573.20	323.04	478.97	-319.27	577.72	56.00	0.18	-0.16
49	8,788	4.40	48.50	8760.61	332.37	490.58	-328.51	592.57	55.88	0.27	-0.16
50	8,976	4.70	51.40	8948.02	341.95	502.01	-338.00	607.41	55.74	0.20	0.16
51	9,165	4.50	46.70	9136.41	351.87	513.45	-347.82	622.45	55.58	0.23	-0.11
52	9,353	3.80	26.60	9323.92	362.50	521.61	-358.39	635.20	55.20	0.85	-0.37
53	9,539	3.30	19.80	9509.57	373.05	526.18	-368.90	645.01	54.66	0.35	-0.27
54	9,727	5.70	54.90	9697.01	383.51	535.66	-379.29	658.79	54.40	1.89	1.28
55	9,916	4.60	55.50	9885.24	393.20	549.58	-388.87	675.76	54.42	0.58	-0.58
56	10,104	4.10	49.10	10072.70	401.87	560.88	-397.45	689.99	54.38	0.37	-0.27
57	10,292	4.70	51.10	10260.15	411.11	571.95	-406.60	704.37	54.29	0.33	0.32
58	10,482	3.80	48.60	10449.62	420.16	582.73	-415.57	718.41	54.21	0.48	-0.47
59	10,669	3.50	52.20	10636.24	427.75	591.89	-423.09	730.28	54.14	0.20	-0.16
60	10,857	4.80	65.10	10823.75	434.58	603.56	-429.83	743.74	54.24	0.85	0.69
61	11,046	4.90	65.80	11012.07	441.22	618.09	-436.35	759.42	54.48	0.06	0.05
62	11,236	4.80	62.10	11201.39	448.27	632.52	-443.29	775.26	54.67	0.17	-0.05
63	11,425	3.80	60.90	11389.86	455.01	644.98	-449.93	789.33	54.80	0.53	-0.53
64	11,614	3.10	67.70	11578.52	460.00	655.18	-454.84	800.54	54.93	0.43	-0.37
65	11,802	2.70	62.90	11766.27	463.95	663.83	-458.72	809.88	55.05	0.25	-0.21
66	11,896	1.50	99.30	11860.21	464.76	667.01	-459.50	812.96	55.13	1.85	-1.28
67	12,052	1.80	100.60	12016.15	463.97	671.44	-458.69	816.15	55.35	0.19	0.19

V09.04.02

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Location:	Lea County, NM		
Rig:	Patterson #282	Magnetic Declination:	6.19
Job Number:	MSMO-68804		
API #:	30-025-46154		
Vertical Section Azimuth:	179.55	Proposed Direction:	179.55
Survey Calculation Method:	Minimum Curvature		
PTB:	MD	INC	AZM
	17,614	86.5	175.8
	TVD	N/S	E/W
	12871.31	-4668.61	900.36
	VS	4675.54	

#	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	12,120	1.40	96.90	12084.12	463.68	673.31	-458.38	817.52	55.45	0.61	-0.59
69	12,215	6.40	163.10	12178.90	458.47	676.00	-453.14	816.81	55.85	6.29	5.26
70	12,262	13.80	165.30	12225.14	450.53	678.19	-445.19	814.20	56.40	15.76	15.74
71	12,309	19.90	170.80	12270.10	437.20	680.90	-431.84	809.17	57.30	13.40	12.98
72	12,356	26.10	175.50	12313.35	418.98	682.99	-413.60	801.26	58.47	13.75	13.19
73	12,403	31.00	174.50	12354.62	396.61	684.96	-391.22	791.50	59.93	10.47	10.43
74	12,497	41.90	171.20	12430.12	341.32	692.10	-335.87	771.69	63.75	11.78	11.60
75	12,592	50.40	167.60	12495.89	274.09	704.84	-268.55	756.26	68.75	9.35	8.95
76	12,686	59.50	165.70	12549.82	199.32	722.66	-193.64	749.64	74.58	9.82	9.68
77	12,781	62.50	165.10	12595.87	118.92	743.61	-113.08	753.06	80.91	3.21	3.16
78	12,875	64.90	164.90	12637.52	37.53	765.42	-31.52	766.34	87.19	2.56	2.55
79	12,969	70.80	166.10	12672.94	-46.72	787.19	52.90	788.57	93.40	6.39	6.28
80	13,063	78.00	166.40	12698.20	-134.61	808.69	140.96	819.82	99.45	7.67	7.66
81	13,158	80.80	171.40	12715.69	-226.20	826.64	232.69	857.03	105.30	5.95	2.95
82	13,252	81.00	175.70	12730.56	-318.41	837.06	324.98	895.58	110.83	4.52	0.21
83	13,346	80.60	175.20	12745.59	-410.91	844.42	417.53	939.09	115.95	0.68	-0.43
84	13,441	82.00	176.60	12759.96	-504.57	851.14	511.24	989.46	120.66	2.07	1.47
85	13,535	84.90	179.90	12770.69	-597.89	853.98	604.58	1042.48	125.00	4.66	3.09
86	13,629	86.30	180.70	12777.90	-691.61	853.49	698.29	1098.53	129.02	1.71	1.49
87	13,723	83.70	181.10	12786.09	-785.23	852.02	791.90	1158.67	132.66	2.80	-2.77
88	13,818	83.60	181.80	12796.60	-879.62	849.63	886.26	1222.95	135.99	0.74	-0.11
89	13,912	84.30	181.00	12806.50	-973.07	847.35	979.69	1290.29	138.95	1.13	0.74
90	14,006	85.90	180.90	12814.53	-1066.71	845.79	1073.32	1361.33	141.59	1.71	1.70
91	14,101	88.00	181.00	12819.59	-1161.55	844.22	1168.15	1435.94	143.99	2.21	2.21
92	14,195	88.10	179.90	12822.79	-1255.49	843.48	1262.08	1512.52	146.11	1.17	0.11
93	14,290	89.80	181.50	12824.53	-1350.46	842.32	1357.04	1591.62	148.05	2.46	1.79
94	14,383	88.40	178.20	12825.99	-1443.44	842.56	1450.01	1671.35	149.73	3.85	-1.51
95	14,476	90.50	181.00	12826.88	-1536.42	843.21	1542.99	1752.59	151.24	3.76	2.26
96	14,570	90.10	179.90	12826.39	-1630.41	842.48	1636.98	1835.21	152.67	1.25	-0.43
97	14,665	88.20	177.70	12827.80	-1725.37	844.46	1731.95	1920.94	153.92	3.06	-2.00
98	14,759	87.00	175.50	12831.73	-1819.11	850.03	1825.73	2007.92	154.95	2.66	-1.28
99	14,853	89.20	179.70	12834.85	-1912.95	853.96	1919.60	2094.91	155.94	5.04	2.34
100	14,948	89.00	176.30	12836.35	-2007.87	857.28	2014.54	2183.22	156.88	3.58	-0.21
101	15,043	88.00	177.30	12838.83	-2102.69	862.58	2109.40	2272.74	157.70	1.49	-1.05

V09.04.02

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Location:		Lea County, NM									
Rig:		Patterson #282				Magnetic Declination:		6.19		REFERENCED TO GRID NORTH	
Job Number:		MSMO-68804									
API #:		30-025-46154									
Vertical Section Azimuth:					179.55		Proposed Direction:		179.55		
Survey Calculation Method:					Minimum Curvature						
PTB:	MD		INC		AZM	TVD	N/S	E/W		VS	
	17,614		86.5		175.8	12871.31	-4668.61	900.36		4675.54	
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance Azm		DLS/ 100	BUR/ 100'
102	15,136	87.60	177.50	12842.40	-2195.52	866.79	2202.26	2360.43	158.46	0.48	-0.43
103	15,230	88.90	179.40	12845.27	-2289.44	869.34	2296.19	2448.93	159.21	2.45	1.38
104	15,325	86.80	179.10	12848.84	-2384.36	870.58	2391.12	2538.32	159.94	2.23	-2.21
105	15,419	90.60	184.60	12850.97	-2478.23	867.54	2484.97	2625.69	160.71	7.11	4.04
106	15,513	92.10	185.60	12848.76	-2571.83	859.19	2578.50	2711.55	161.53	1.92	1.60
107	15,608	89.60	183.00	12847.35	-2666.54	852.07	2673.14	2799.36	162.28	3.80	-2.63
108	15,702	89.00	181.70	12848.50	-2760.45	848.21	2767.02	2887.83	162.92	1.52	-0.64
109	15,796	88.30	178.10	12850.71	-2854.40	848.38	2860.98	2977.81	163.45	3.90	-0.74
110	15,891	87.10	176.50	12854.52	-2949.22	852.85	2955.82	3070.05	163.87	2.10	-1.26
111	15,985	85.90	178.10	12860.26	-3042.93	857.27	3049.57	3161.38	164.27	2.13	-1.28
112	16,079	91.00	178.20	12862.80	-3136.82	860.30	3143.48	3252.65	164.66	5.43	5.43
113	16,174	91.60	178.90	12860.65	-3231.76	862.71	3238.44	3344.93	165.05	0.97	0.63
114	16,268	92.50	181.10	12857.29	-3325.70	862.71	3332.37	3435.77	165.46	2.53	0.96
115	16,362	92.50	179.20	12853.18	-3419.60	862.46	3426.27	3526.69	165.84	2.02	0.00
116	16,457	87.80	176.90	12852.94	-3514.51	865.69	3521.20	3619.56	166.16	5.51	-4.95
117	16,551	87.50	173.60	12856.79	-3608.10	873.47	3614.85	3712.32	166.39	3.52	-0.32
118	16,645	88.70	174.30	12859.91	-3701.52	883.37	3708.35	3805.47	166.58	1.48	1.28
119	16,739	88.20	174.30	12862.45	-3795.02	892.70	3801.92	3898.60	166.76	0.53	-0.53
120	16,834	87.10	177.90	12866.35	-3889.71	899.16	3896.65	3992.28	166.98	3.96	-1.16
121	16,928	90.30	183.30	12868.48	-3983.63	898.17	3990.56	4083.63	167.29	6.68	3.40
122	17,022	92.90	182.00	12865.86	-4077.48	893.83	4084.38	4174.30	167.64	3.09	2.77
123	17,117	91.10	182.40	12862.54	-4172.35	890.18	4179.21	4266.25	167.96	1.94	-1.89
124	17,211	89.60	181.00	12861.97	-4266.30	887.39	4273.14	4357.61	168.25	2.18	-1.60
125	17,305	88.80	179.80	12863.28	-4360.29	886.74	4367.12	4449.54	168.50	1.53	-0.85
126	17,399	91.60	179.10	12862.95	-4454.27	887.64	4461.11	4541.86	168.73	3.07	2.98
127	17,494	86.90	176.00	12864.20	-4549.14	891.70	4556.00	4635.71	168.91	5.93	-4.95
128	17,555	86.50	175.80	12867.71	-4609.88	896.05	4616.78	4696.16	169.00	0.73	-0.66
PTB:	17,614	86.50	175.80	12871.31	-4668.61	900.36	4675.54	4754.64	169.08	0.00	0.00