



**Caza Operating LLC
Lea County, New Mexico (NAD 83)
30-025-46552
Sioux 25-36 State Fed Com 11H
Wellbore 1**

**MS MWD
Certified Survey Report
15 July 2020**

Field	Lea County, New Mexico (NAD 83) - Caza Operating LLC		
CRS	US-SPC83 / New Mexico Eastern Zone		
Apply Scale Factor	NO	Scale Factor	0.9999090909
System Datum	Mean Sea Level	Depth Datum->MSL	3109.99 UsFt

Well	Sioux 25-36 State Fed Com 11H		
Local North	60.04 UsFt	Local East	-0.86 UsFt
Map Northing	404639.85 US survey foot	Map Easting	855900.79 US survey foot
Latitude	32° 6' 30.093" N	Longitude	103° 19' 2.642" W
Depth Datum	WELL	Datum Elevation	3110.00 UsFt
GL Elevation	3086.00 UsFt		
Grid Convergence	0.540		

Well bore	Sioux 25-36 State Fed Com 11H - Wellbore 1		
Magnetic Model	User defined	Date	10/06/2020
Total Field (nT)	47664.60	Dip Angle (°)	59.700
Declination (°)	6.433		
VS Origin	User Defined	VS Azimuth	176.61
VS Origin NS	0.00 UsFt	VS Origin EW	0.00 UsFt

Survey Program	MS MWD		
Depth From (UsFt)	Depth To (UsFt)	Survey	Survey Tool
0.00	9080.00	Phoenix MWD	MWD+HRGM
9241.00	22160.00	MS MWD	MWD+HRGM

Survey Report									
MD UsFt	Inc °	Azi °	TVD UsFt	NS UsFt	EW UsFt	VS UsFt	DLS (°/100 UsFt)	BR (°/100 UsFt)	TR (°/100 UsFt)
9080.00	1.72	228.70	9048.38	85.92	547.07	-53.42	0.00	0.00	0.00 Tie In
9241.00	1.80	229.10	9209.30	82.67	543.34	-50.40	0.05	0.05	0.25
9334.00	2.00	225.50	9302.25	80.58	541.08	-48.44	0.25	0.22	-3.87
9429.00	2.50	220.80	9397.18	77.85	538.55	-45.86	0.56	0.53	-4.95
9523.00	2.40	221.40	9491.09	74.82	535.90	-43.00	0.11	-0.11	0.64
9617.00	2.50	226.40	9585.01	71.93	533.12	-40.28	0.25	0.11	5.32
9712.00	1.70	220.60	9679.94	69.43	530.70	-37.93	0.87	-0.84	-6.11
9808.00	1.40	198.50	9775.91	67.24	529.40	-35.81	0.69	-0.31	-23.02
9901.00	1.40	183.70	9868.88	65.02	528.97	-33.63	0.39	0.00	-15.91
9996.00	1.00	143.40	9963.86	63.20	529.39	-31.79	0.96	-0.42	-42.42
10090.00	0.90	133.30	10057.85	62.04	530.41	-30.56	0.21	-0.11	-10.74
10183.00	0.90	100.70	10150.84	61.40	531.66	-29.85	0.54	0.00	-35.05
10276.00	1.30	95.80	10243.82	61.16	533.43	-29.51	0.44	0.43	-5.27
10369.00	1.70	82.70	10336.79	61.23	535.85	-29.43	0.56	0.43	-14.09
10462.00	1.80	72.20	10429.75	61.85	538.61	-29.89	0.36	0.11	-11.29
10557.00	1.70	81.80	10524.70	62.50	541.42	-30.38	0.33	-0.11	10.11
10651.00	0.60	171.30	10618.69	62.22	542.88	-30.01	1.91	-1.17	95.21
10745.00	2.10	222.70	10712.66	60.46	541.78	-28.32	1.90	1.60	54.68
10839.00	3.60	231.00	10806.54	57.34	538.32	-25.41	1.65	1.60	8.83
10934.00	5.10	234.60	10901.27	53.02	532.56	-21.43	1.60	1.58	3.79
11028.00	6.50	240.00	10994.78	47.94	524.55	-16.84	1.60	1.49	5.74
11122.00	6.90	241.60	11088.14	42.59	514.97	-12.07	0.47	0.43	1.70
11216.00	6.00	243.50	11181.54	37.71	505.61	-7.75	0.98	-0.96	2.02
11310.00	5.40	243.10	11275.08	33.52	497.27	-4.06	0.64	-0.64	-0.43
11405.00	4.70	247.40	11369.71	30.00	489.69	-0.99	0.84	-0.74	4.53
11452.00	5.60	226.00	11416.52	27.67	486.26	1.13	4.48	1.91	-45.53
11500.00	10.60	199.80	11464.04	21.88	483.08	6.72	12.69	10.42	-54.58
11547.00	15.50	197.50	11509.82	11.82	479.72	16.57	10.48	10.43	-4.89
11594.00	20.40	194.70	11554.52	-2.10	475.75	30.23	10.58	10.43	-5.96
11641.00	23.90	184.60	11598.06	-19.53	472.91	47.46	10.98	7.45	-21.49
11689.00	27.80	182.20	11641.25	-40.41	471.70	68.23	8.41	8.13	-5.00
11783.00	36.80	175.60	11720.64	-90.51	473.02	118.32	10.27	9.57	-7.02
11876.00	43.20	179.60	11791.86	-150.18	475.38	178.03	7.41	6.88	4.30
11971.00	52.20	176.50	11855.74	-220.31	477.91	248.19	9.77	9.47	-3.26
12065.00	60.70	175.50	11907.64	-298.39	483.40	326.45	9.09	9.04	-1.06
12160.00	70.10	176.00	11947.15	-384.43	489.78	412.72	9.91	9.89	0.53
12255.00	77.10	177.80	11973.95	-475.37	494.68	503.79	7.59	7.37	1.89
12348.00	86.00	177.80	11987.61	-567.20	498.21	595.67	9.57	9.57	0.00
12380.00	89.70	177.30	11988.81	-599.15	499.57	627.64	11.67	11.56	-1.56
12397.00	91.20	177.80	11988.67	-616.13	500.30	644.63	9.30	8.82	2.94
12491.00	91.50	177.50	11986.46	-710.02	504.15	738.59	0.45	0.32	-0.32
12583.00	91.70	176.90	11983.89	-801.88	508.65	830.55	0.69	0.22	-0.65
12675.00	90.70	177.50	11981.96	-893.75	513.14	922.52	1.27	-1.09	0.65
12768.00	84.80	175.90	11985.61	-986.48	518.48	1015.41	6.57	-6.34	-1.72
12860.00	84.10	177.30	11994.51	-1077.88	523.91	1106.97	1.69	-0.76	1.52
12953.00	89.00	182.30	12000.11	-1170.65	524.23	1199.60	7.52	5.27	5.38
13045.00	88.30	180.30	12002.28	-1262.60	522.14	1291.27	2.30	-0.76	-2.17
13137.00	88.10	180.10	12005.17	-1354.55	521.82	1383.04	0.31	-0.22	-0.22
13229.00	89.20	182.20	12007.34	-1446.50	519.97	1474.72	2.58	1.20	2.28
13322.00	86.30	180.80	12010.99	-1539.39	517.54	1567.30	3.46	-3.12	-1.51

Survey Report

MD UsFt	Inc °	Azi °	TVD UsFt	NS UsFt	EW UsFt	VS UsFt	DLS (°/100 UsFt)	BR (°/100 UsFt)	TR (°/100 UsFt)
13414.00	90.40	180.70	12013.63	-1631.32	516.34	1659.00	4.46	4.46	-0.11
13508.00	90.30	179.60	12013.06	-1725.32	516.09	1752.82	1.18	-0.11	-1.17
13601.00	91.20	180.40	12011.84	-1818.31	516.09	1845.64	1.29	0.97	0.86
13696.00	91.60	180.50	12009.52	-1913.28	515.35	1940.40	0.43	0.42	0.11
13790.00	90.30	180.20	12007.96	-2007.26	514.77	2034.19	1.42	-1.38	-0.32
13885.00	91.30	180.60	12006.64	-2102.25	514.11	2128.97	1.13	1.05	0.42
13921.00	88.40	179.60	12006.73	-2138.24	514.05	2164.90	8.52	-8.06	-2.78
13980.00	90.40	180.20	12007.35	-2197.24	514.15	2223.79	3.54	3.39	1.02
14074.00	88.80	179.80	12008.01	-2291.23	514.15	2317.62	1.75	-1.70	-0.43
14168.00	92.80	179.40	12006.69	-2385.20	514.80	2411.47	4.28	4.26	-0.43
14262.00	91.90	178.20	12002.84	-2479.10	516.77	2505.32	1.59	-0.96	-1.28
14357.00	90.20	177.90	12001.10	-2574.02	520.00	2600.27	1.82	-1.79	-0.32
14451.00	88.40	176.50	12002.25	-2667.90	524.59	2694.25	2.43	-1.91	-1.49
14545.00	86.80	177.10	12006.18	-2761.66	529.84	2788.16	1.82	-1.70	0.64
14639.00	88.62	177.72	12009.94	-2855.49	534.08	2882.07	2.05	1.94	0.66
14733.00	90.42	179.21	12010.73	-2949.45	536.60	2976.01	2.49	1.91	1.59
14827.00	89.89	178.77	12010.47	-3043.43	538.26	3069.93	0.73	-0.56	-0.47
14921.00	86.29	178.86	12013.60	-3137.34	540.20	3163.80	3.83	-3.83	0.10
15015.00	88.40	180.00	12017.96	-3231.23	541.13	3257.57	2.55	2.24	1.21
15109.00	88.22	180.09	12020.73	-3325.19	541.06	3351.36	0.21	-0.19	0.10
15194.00	88.62	180.09	12023.07	-3410.16	540.92	3436.18	0.47	0.47	0.00
15286.00	89.80	180.70	12024.34	-3502.14	540.29	3527.96	1.44	1.28	0.66
15379.00	87.60	179.65	12026.45	-3595.11	540.01	3620.75	2.62	-2.37	-1.13
15473.00	87.38	179.39	12030.57	-3689.02	540.79	3714.54	0.36	-0.23	-0.28
15568.00	87.38	178.95	12034.91	-3783.91	542.17	3809.35	0.46	0.00	-0.46
15661.00	86.29	178.60	12040.05	-3876.74	544.15	3902.14	1.23	-1.17	-0.38
15756.00	86.90	179.30	12045.69	-3971.56	545.89	3996.89	0.98	0.64	0.74
15849.00	87.30	179.30	12050.39	-4064.43	547.02	4089.67	0.43	0.43	0.00
15944.00	88.09	179.65	12054.21	-4159.35	547.89	4184.47	0.91	0.83	0.37
16038.00	85.98	178.42	12059.08	-4253.21	549.47	4278.25	2.60	-2.24	-1.31
16132.00	86.29	177.89	12065.41	-4346.94	552.49	4372.01	0.65	0.33	-0.56
16227.00	86.20	178.33	12071.63	-4441.69	555.62	4466.77	0.47	-0.09	0.46
16322.00	86.59	178.42	12077.61	-4536.46	558.31	4561.54	0.42	0.41	0.09
16417.00	86.81	177.45	12083.08	-4631.24	561.73	4656.35	1.05	0.23	-1.02
16510.00	86.90	177.89	12088.18	-4724.02	565.50	4749.20	0.48	0.10	0.47
16604.00	87.30	178.42	12092.93	-4817.85	568.52	4843.04	0.71	0.43	0.56
16698.00	86.29	176.66	12098.19	-4911.62	572.55	4936.88	2.16	-1.07	-1.87
16792.00	86.42	176.66	12104.17	-5005.27	578.02	5030.69	0.14	0.14	0.00
16887.00	86.59	176.93	12109.96	-5099.94	583.32	5125.51	0.34	0.18	0.28
16979.00	90.59	178.68	12112.22	-5191.82	586.84	5217.44	4.75	4.35	1.90
17073.00	90.90	179.12	12111.00	-5285.80	588.64	5311.36	0.57	0.33	0.47
17166.00	90.11	178.68	12110.18	-5378.78	590.43	5404.28	0.97	-0.85	-0.47
17261.00	90.68	178.60	12109.52	-5473.75	592.68	5499.21	0.61	0.60	-0.08
17350.00	92.22	178.86	12107.27	-5562.69	594.65	5588.12	1.75	1.73	0.29
17450.00	88.48	181.23	12106.66	-5662.67	594.58	5687.92	4.43	-3.74	2.37
17544.00	86.29	182.99	12110.95	-5756.50	591.12	5781.38	2.99	-2.33	1.87
17638.00	89.80	184.22	12114.16	-5850.24	585.21	5874.61	3.96	3.73	1.31
17733.00	94.90	183.69	12110.26	-5944.90	578.67	5968.72	5.40	5.37	-0.56
17828.00	94.51	178.95	12102.47	-6039.53	576.49	6063.05	4.99	-0.41	-4.99
17922.00	92.31	178.16	12096.88	-6133.33	578.86	6156.82	2.49	-2.34	-0.84
18015.00	92.40	177.72	12093.05	-6226.19	582.20	6249.72	0.48	0.10	-0.47
18110.00	92.48	178.51	12089.01	-6321.05	585.32	6344.60	0.84	0.08	0.83
18204.00	90.51	180.88	12086.56	-6415.00	585.82	6438.42	3.28	-2.10	2.52
18299.00	90.29	180.97	12085.89	-6509.99	584.28	6533.15	0.25	-0.23	0.09
18394.00	90.29	181.58	12085.41	-6604.96	582.17	6627.83	0.64	0.00	0.64
18490.00	90.20	181.67	12085.00	-6700.92	579.45	6723.46	0.13	-0.09	0.09
18584.00	90.29	181.58	12084.60	-6794.89	576.78	6817.10	0.14	0.10	-0.10
18679.00	91.78	181.58	12082.88	-6889.83	574.16	6911.73	1.57	1.57	0.00
18775.00	92.31	180.53	12079.46	-6985.75	572.40	7007.37	1.22	0.55	-1.09
18869.00	92.70	181.32	12075.35	-7079.65	570.88	7101.02	0.94	0.41	0.84
18963.00	92.22	181.32	12071.32	-7173.54	568.72	7194.61	0.51	-0.51	0.00
19058.00	92.22	181.41	12067.64	-7268.44	566.46	7289.22	0.09	0.00	0.09
19153.00	93.19	179.12	12063.15	-7363.32	566.02	7383.91	2.62	1.02	-2.41
19249.00	92.88	178.95	12058.07	-7459.18	567.63	7479.69	0.37	-0.32	-0.18
19343.00	92.79	179.12	12053.42	-7553.05	569.21	7573.49	0.20	-0.10	0.18
19437.00	91.91	178.95	12049.56	-7646.95	570.79	7667.33	0.95	-0.94	-0.18
19531.00	91.52	179.56	12046.75	-7740.90	572.01	7761.18	0.77	-0.41	0.65
19626.00	92.40	179.21	12043.50	-7835.84	573.03	7856.01	1.00	0.93	-0.37
19721.00	92.00	178.86	12039.86	-7930.76	574.63	7950.86	0.56	-0.42	-0.37
19815.00	91.60	178.77	12036.90	-8024.69	576.58	8044.74	0.44	-0.43	-0.10
19911.00	92.09	179.83	12033.81	-8120.63	577.75	8140.59	1.22	0.51	1.10
20006.00	89.58	179.21	12032.43	-8215.61	578.54	8235.45	2.72	-2.64	-0.65
20100.00	88.79	178.68	12033.76	-8309.58	580.27	8329.36	1.01	-0.84	-0.56
20196.00	88.62	179.56	12035.93	-8405.55	581.75	8425.24	0.93	-0.18	0.92
20291.00	88.40	179.47	12038.40	-8500.51	582.55	8520.08	0.25	-0.23	-0.09
20386.00	88.22	180.53	12041.21	-8595.47	582.55	8614.88	1.13	-0.19	1.12
20479.00	88.31	179.91	12044.02	-8688.43	582.20	8707.65	0.67	0.10	-0.67
20574.00	87.60	179.56	12047.41	-8783.36	582.63	8802.45	0.83	-0.75	-0.37

Survey Report

MD UsFt	Inc °	Azi °	TVD UsFt	NS UsFt	EW UsFt	VS UsFt	DLS (°/100 UsFt)	BR (°/100 UsFt)	TR (°/100 UsFt)
20669.00	88.00	179.83	12051.06	-8878.29	583.14	8897.24	0.51	0.42	0.28
20764.00	89.89	182.37	12052.81	-8973.25	581.32	8991.92	3.33	1.99	2.67
20859.00	89.98	180.35	12052.92	-9068.21	579.06	9086.59	2.13	0.09	-2.13
20954.00	88.22	179.65	12054.41	-9163.20	579.06	9181.41	1.99	-1.85	-0.74
21049.00	88.00	179.47	12057.54	-9258.14	579.79	9276.23	0.30	-0.23	-0.19
21143.00	88.48	180.26	12060.43	-9352.10	580.01	9370.03	0.98	0.51	0.84
21238.00	89.49	179.91	12062.11	-9447.08	579.87	9464.84	1.13	1.06	-0.37
21332.00	88.09	179.39	12064.10	-9541.06	580.44	9558.68	1.59	-1.49	-0.55
21427.00	88.70	180.35	12066.76	-9636.02	580.66	9653.49	1.20	0.64	1.01
21523.00	89.80	179.91	12068.01	-9732.01	580.44	9749.30	1.23	1.15	-0.46
21617.00	89.41	179.56	12068.66	-9826.00	580.88	9843.16	0.56	-0.41	-0.37
21713.00	90.90	179.56	12068.40	-9922.00	581.61	9939.03	1.55	1.55	0.00
21806.00	90.42	179.56	12067.33	-10014.99	582.33	10031.90	0.52	-0.52	0.00
21901.00	88.62	179.39	12068.13	-10109.98	583.20	10126.77	1.90	-1.89	-0.18
21996.00	88.22	179.47	12070.75	-10204.94	584.14	10221.62	0.43	-0.42	0.08
22090.00	87.69	179.91	12074.10	-10298.87	584.65	10315.42	0.73	-0.56	0.47
22160.00	87.69	179.91	12076.92	-10368.82	584.76	10385.25	0.00	0.00	0.00 PTB



3335 Pollok Drive
Conroe, Texas 77303
936.442.2500 (office)
www.msdir.com

MS Directional LLC Survey Data Certification

MS Directional LLC Job Number: MSMO-77716
Survey Type: MWD
Operating Company: Caza Operating LLC
Well Name and Number: Sioux 25-36 State Fed Com 11H
Location: Lea, New Mexico
API Number: 30-025-46552
Tie In Depth: 9080.00
Surveyed Depths: 9241.00' - 22090.00'
Projected TD Survey: 22160.00'
Dates Performed: 06/07/2020 - 07/01/2020

To the best of my knowledge, I certify the following:

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

MWD Surveyor Name: Jeremy Flowers

MWD Operations Manager: Charles Davis

Signature:

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

Date: 07/15/2020

Email: charles.davis@msdir.com