

Results of Directional Survey

API number:	30-025-41640		
OGRID:		Operator:	CAZA OPERATING, LLC
		Property:	WEST COPPERLINE 29 FED STATE COM # 2H

surface	ULSTR:	D	29	T	23S	R	34E
				330	FNL	660	FWL

BH Loc	ULSTR:	M	29	T	23S	R	34E
14950	MD	10555.6	TVD	355	FSL	421	FWL
				4925	FNL		

Top Perf/OH	ULSTR:	D	29	T	23S	R	34E
10822	MD	10562.6	TVD	801	FNL	559	FWL

Bot Perf/OH	ULSTR:	M	29	T	23S	R	34E
14864	MD	10560.5	TVD	440	FSL	425	FWL
				4840	FNL		

	MD	N/S	E/W	VD
	10807	-456.55	-99.55	10561.45
TOP PERFS/OH	10822	-471.41	-101.17	10562.64
	10839	-488.26	-103.00	10563.99
	14836	-4481.73	-233.76	10561.99
BOT PERFS/OH	14864	-4509.66	-235.10	10560.53
	14903	-4548.56	-236.97	10558.49

NEXT TO LAST	14903	-4548.56	-236.97	10558.49
LAST READING	14950	-4595.43	-239.10	10555.62
TD	14950	-4595.43	-239.10	10555.62

Surface Location	330	FN	660	FW
Projected BHL	4925	FN	421	FW
Location of				
Top Perfs/OH	801	FN	559	FW
Bottom Perfs/OH	4840	FN	425	FW

SUMMARY of Subsurface Locations

Surface Location	D-29-23S-34E	330	FN	660	FW	Vert. Depth
Top Perfs/OH	D-29-23S-34E	801	FN	559	FW	10562.64
Bottom Perfs/OH	M-29-23S-34E	4840	FN	425	FW	10560.53
Projected TD	M-29-23S-34E	4925	FN	421	FW	10555.62

APR 28 2014

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Caza Operating, LLC.

Lea County, NM

West Copperline 29 State Com #2H

West Copperline 29 State Com #2H

Lateral #1

Design: Laterl #1

Standard Survey Report

17 March, 2014

M3P
DIRECTIONAL
SERVICES

M3P Directional Services

Survey Report



Company:	Caza Operating, LLC.	Local Co-ordinate Reference:	Site West Copperline 29 State Com #2H
Project:	Lea County, NM	TVD Reference:	WELL @ 3585.50ft
Site:	West Copperline 29 State Com #2H	MD Reference:	WELL @ 3585.50ft
Well:	West Copperline 29 State Com #2H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 5000.1 Single User Db

Project	Lea County, NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	West Copperline 29 State Com #2H				
Site Position:		Northing:	467,248.90 ft	Latitude:	32° 16' 54.546 N
From:	Map	Easting:	758,156.00 ft	Longitude:	103° 29' 52.838 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.45 °

Well	West Copperline 29 State Com #2H					
Well Position	+N/-S	0.00 ft	Northing:	467,248.90 ft	Latitude:	32° 16' 54.546 N
	+E/-W	0.00 ft	Easting:	758,156.00 ft	Longitude:	103° 29' 52.838 W
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,567.00 ft	

Wellbore	Lateral #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	2/12/2014	(°)	(°)	(nT)
			7.23	60.19	48,391

Design	Lateral #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.00	0.00	0.00	182.94	

Survey Program	Date	3/13/2014			
From	To	Survey (Wellbore)	Tool Name	Description	
(ft)	(ft)				
100.00	1,350.00	VES Gyro Survey (Lateral #1)	CB-GYRO-MS	Camera based gyro multishot	
1,350.00	14,950.00	M3P MWD Survey (Lateral #1)	MWD	MWD - Standard	

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(°)	Depth	(ft)	(ft)	Section	Rate	Rate	Rate
(ft)			(ft)			(ft)	(°/100ft)	(°/100ft)	(°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.37	241.28	100.00	-0.16	-0.28	0.17	0.37	0.37	0.00
200.00	0.64	251.59	200.00	-0.49	-1.10	0.54	0.28	0.27	10.31
300.00	0.90	219.49	299.99	-1.27	-2.13	1.38	0.49	0.26	-32.10
400.00	1.12	214.49	399.97	-2.68	-3.18	2.84	0.24	0.22	-5.00
500.00	0.68	193.69	499.96	-4.06	-3.87	4.26	0.54	-0.44	-20.80
600.00	0.37	168.71	599.96	-4.96	-3.95	5.15	0.38	-0.31	-24.98
700.00	0.20	161.51	699.95	-5.44	-3.83	5.63	0.17	-0.17	-7.20
800.00	0.47	158.31	799.95	-5.98	-3.62	6.16	0.27	0.27	-3.20
900.00	0.29	124.99	899.95	-6.51	-3.27	6.67	0.28	-0.18	-33.32

M3P Directional Services

Survey Report



Company: Caza Operating, LLC.
Project: Lea County, NM
Site: West Copperline 29 State Com #2H
Well: West Copperline 29 State Com #2H
Wellbore: Lateral #1
Design: Laterl #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Site West Copperline 29 State Com #2H
 WELL @ 3585.50ft
 WELL @ 3585.50ft
 Grid
 Minimum Curvature
 EDM 5000.1 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,000.00	0.44	114.39	999.95	-6.81	-2.71	6.94	0.16	0.15	-10.60
1,100.00	0.48	59.48	1,099.95	-6.76	-2.00	6.85	0.43	0.04	-54.91
1,200.00	0.83	33.50	1,199.94	-5.94	-1.24	6.00	0.45	0.35	-25.98
1,300.00	1.35	10.79	1,299.92	-4.18	-0.62	4.21	0.67	0.52	-22.71
1,350.00	1.38	3.46	1,349.91	-3.00	-0.47	3.02	0.35	0.06	-14.66
Tie-on to VES Gyro Survey									
1,396.00	1.70	3.00	1,395.89	-1.77	-0.40	1.79	0.70	0.70	-1.00
First M3P MWD Survey									
1,427.00	1.70	2.80	1,426.88	-0.85	-0.35	0.87	0.02	0.00	-0.65
1,457.00	1.60	3.50	1,456.87	0.01	-0.31	0.00	0.34	-0.33	2.33
1,489.00	1.60	5.50	1,488.85	0.90	-0.24	-0.89	0.17	0.00	6.25
1,520.00	1.40	356.20	1,519.84	1.71	-0.22	-1.70	1.01	-0.65	-30.00
1,552.00	1.40	0.30	1,551.83	2.49	-0.24	-2.48	0.31	0.00	12.81
1,582.00	1.50	1.40	1,581.82	3.25	-0.23	-3.24	0.35	0.33	3.67
1,644.00	1.60	359.40	1,643.80	4.93	-0.22	-4.91	0.18	0.16	-3.23
1,675.00	1.50	348.90	1,674.79	5.76	-0.30	-5.74	0.97	-0.32	-33.87
1,706.00	1.50	346.70	1,705.78	6.55	-0.48	-6.52	0.19	0.00	-7.10
1,736.00	1.20	344.00	1,735.77	7.24	-0.65	-7.19	1.02	-1.00	-9.00
1,767.00	1.20	346.90	1,766.76	7.86	-0.82	-7.81	0.20	0.00	9.35
1,798.00	1.40	349.90	1,797.76	8.55	-0.96	-8.49	0.68	0.65	9.68
1,859.00	1.60	343.80	1,858.74	10.10	-1.32	-10.02	0.42	0.33	-10.00
1,923.00	1.70	333.20	1,922.71	11.81	-2.00	-11.69	0.50	0.16	-16.56
1,956.00	1.70	330.60	1,955.70	12.67	-2.46	-12.53	0.23	0.00	-7.88
1,988.00	1.80	327.60	1,987.68	13.51	-2.97	-13.34	0.42	0.31	-9.37
2,020.00	1.80	325.50	2,019.66	14.35	-3.52	-14.15	0.21	0.00	-6.56
2,052.00	1.70	329.30	2,051.65	15.17	-4.05	-14.94	0.48	-0.31	11.87
2,084.00	1.70	323.10	2,083.64	15.96	-4.57	-15.70	0.57	0.00	-19.37
2,116.00	1.60	326.00	2,115.62	16.71	-5.11	-16.43	0.41	-0.31	9.06
2,148.00	1.70	325.60	2,147.61	17.47	-5.63	-17.16	0.31	0.31	-1.25
2,180.00	1.80	328.80	2,179.59	18.29	-6.15	-17.95	0.44	0.31	10.00
2,212.00	2.00	325.30	2,211.58	19.18	-6.73	-18.81	0.72	0.62	-10.94
2,244.00	2.00	327.00	2,243.56	20.11	-7.35	-19.71	0.19	0.00	5.31
2,276.00	2.20	329.50	2,275.54	21.11	-7.97	-20.67	0.69	0.62	7.81
2,308.00	2.20	328.70	2,307.51	22.16	-8.60	-21.69	0.10	0.00	-2.50
2,341.00	2.00	331.60	2,340.49	23.21	-9.20	-22.71	0.69	-0.61	8.79
2,435.00	2.00	334.60	2,434.43	26.13	-10.69	-25.55	0.11	0.00	3.19
2,530.00	2.00	340.80	2,529.37	29.20	-11.94	-28.55	0.23	0.00	6.53
2,624.00	2.20	342.00	2,623.31	32.46	-13.04	-31.75	0.22	0.21	1.28
2,719.00	1.10	319.80	2,718.27	34.89	-14.19	-34.12	1.32	-1.16	-23.37
2,814.00	0.10	271.30	2,813.26	35.59	-14.87	-34.78	1.09	-1.05	-51.05
2,910.00	0.10	74.70	2,909.26	35.61	-14.87	-34.81	0.21	0.00	170.21
3,004.00	0.30	62.90	3,003.26	35.75	-14.57	-34.95	0.22	0.21	-12.55
3,099.00	0.30	28.00	3,098.26	36.08	-14.23	-35.30	0.19	0.00	-36.74

M3P Directional Services

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 Site: West Copperline 29 State Com #2H
 Well: West Copperline 29 State Com #2H
 Wellbore: Lateral #1
 Design: Laterl #1

Local Co-ordinate Reference: Site West Copperline 29 State Com #2H
 TVD Reference: WELL @ 3585.50ft
 MD Reference: WELL @ 3585.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: EDM 5000.1 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3,193.00	0.60	23.00	3,192.26	36.75	-13.92	-35.99	0.32	0.32	-5.32
3,289.00	0.50	14.90	3,288.25	37.62	-13.62	-36.87	0.13	-0.10	-8.44
3,383.00	0.40	17.50	3,382.25	38.33	-13.42	-37.59	0.11	-0.11	2.77
3,478.00	0.20	43.30	3,477.25	38.77	-13.20	-38.04	0.25	-0.21	27.16
3,573.00	0.20	19.60	3,572.25	39.04	-13.03	-38.32	0.09	0.00	-24.95
3,668.00	0.10	95.80	3,667.25	39.19	-12.89	-38.48	0.21	-0.11	80.21
3,763.00	0.20	0.80	3,762.25	39.35	-12.81	-38.64	0.24	0.11	-100.00
3,857.00	0.10	307.10	3,856.25	39.56	-12.87	-38.85	0.17	-0.11	-57.13
3,953.00	0.10	15.90	3,952.25	39.69	-12.92	-38.98	0.12	0.00	71.67
4,048.00	0.40	73.70	4,047.25	39.86	-12.58	-39.17	0.38	0.32	60.84
4,142.00	0.70	64.50	4,141.24	40.20	-11.74	-39.55	0.33	0.32	-9.79
4,237.00	0.90	58.50	4,236.23	40.84	-10.58	-40.25	0.23	0.21	-6.32
4,331.00	0.10	5.10	4,330.23	41.31	-9.95	-40.75	0.90	-0.85	-56.81
4,425.00	0.50	56.40	4,424.23	41.62	-9.60	-41.07	0.47	0.43	54.57
4,521.00	1.00	51.50	4,520.22	42.37	-8.59	-41.88	0.52	0.52	-5.10
4,614.00	1.00	53.30	4,613.20	43.36	-7.31	-42.93	0.03	0.00	1.94
4,709.00	1.10	59.10	4,708.19	44.33	-5.86	-43.97	0.15	0.11	6.11
4,804.00	1.10	77.40	4,803.17	44.99	-4.19	-44.72	0.37	0.00	19.26
4,899.00	0.20	10.60	4,898.16	45.36	-3.27	-45.13	1.09	-0.95	-70.32
4,994.00	0.10	257.20	4,993.16	45.50	-3.32	-45.27	0.27	-0.11	-119.37
5,026.00	0.10	42.90	5,025.16	45.52	-3.33	-45.28	0.60	0.00	455.31
5,073.00	0.30	274.30	5,072.16	45.55	-3.42	-45.32	0.79	0.43	-273.62
5,167.00	0.30	66.10	5,166.16	45.67	-3.44	-45.44	0.62	0.00	161.49
5,261.00	0.40	217.50	5,260.16	45.51	-3.42	-45.28	0.72	0.11	161.06
5,357.00	0.40	172.50	5,356.16	44.91	-3.58	-44.67	0.32	0.00	-46.88
5,452.00	0.20	316.40	5,451.16	44.71	-3.65	-44.46	0.60	-0.21	151.47
5,547.00	0.20	116.60	5,546.16	44.75	-3.61	-44.51	0.41	0.00	168.63
5,642.00	0.30	140.50	5,641.16	44.48	-3.31	-44.26	0.15	0.11	25.16
5,736.00	0.00	104.80	5,735.16	44.29	-3.15	-44.08	0.32	-0.32	0.00
5,832.00	0.70	215.00	5,831.16	43.81	-3.49	-43.58	0.73	0.73	0.00
5,926.00	0.60	179.50	5,925.15	42.85	-3.81	-42.60	0.43	-0.11	-37.77
6,020.00	0.60	223.90	6,019.15	42.01	-4.15	-41.74	0.48	0.00	47.23
6,115.00	0.20	158.10	6,114.14	41.49	-4.43	-41.21	0.58	-0.42	-69.26
6,210.00	0.30	148.10	6,209.14	41.13	-4.24	-40.86	0.11	0.11	-10.53
6,305.00	0.30	167.20	6,304.14	40.67	-4.05	-40.41	0.10	0.00	20.11
6,400.00	0.60	271.90	6,399.14	40.45	-4.49	-40.16	0.77	0.32	110.21
6,495.00	0.20	6.30	6,494.14	40.63	-4.97	-40.32	0.68	-0.42	99.37
6,591.00	0.90	157.40	6,590.13	40.10	-4.66	-39.81	1.12	0.73	157.40
6,686.00	1.40	164.40	6,685.11	38.29	-4.07	-38.03	0.55	0.53	7.37
6,780.00	1.30	144.00	6,779.09	36.32	-3.13	-36.12	0.52	-0.11	-21.70
6,876.00	1.10	170.10	6,875.07	34.54	-2.33	-34.37	0.60	-0.21	27.19
6,971.00	1.80	175.10	6,970.04	32.15	-2.05	-32.00	0.75	0.74	5.26
7,065.00	4.40	209.80	7,063.90	27.55	-3.71	-27.32	3.29	2.77	36.91
7,159.00	8.40	217.90	7,157.30	19.00	-9.73	-18.48	4.35	4.26	8.62

M3P Directional Services

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Wellbore: Lateral #1
Design: Lateral #1

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TVD Reference: WELL @ 3585.50ft
MD Reference: WELL @ 3585.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,254.00	5.40	224.60	7,251.60	10.34	-17.13	-9.45	3.26	-3.16	7.05
7,348.00	4.00	235.00	7,345.28	5.31	-22.92	-4.13	1.74	-1.49	11.06
7,443.00	3.30	242.10	7,440.09	2.13	-28.05	-0.69	0.88	-0.74	7.47
7,538.00	2.70	239.80	7,534.96	-0.28	-32.40	1.94	0.64	-0.63	-2.42
7,633.00	2.20	240.00	7,629.87	-2.31	-35.91	4.15	0.53	-0.53	0.21
7,728.00	1.40	224.60	7,724.82	-4.05	-38.31	6.01	0.98	-0.84	-16.21
7,822.00	0.50	171.50	7,818.81	-5.27	-39.05	7.27	1.24	-0.96	-56.49
7,917.00	0.40	116.20	7,913.81	-5.83	-38.70	7.81	0.45	-0.11	-58.21
8,012.00	0.80	130.60	8,008.80	-6.41	-37.89	8.34	0.45	0.42	15.16
8,107.00	0.70	166.50	8,103.80	-7.40	-37.26	9.31	0.50	-0.11	37.79
8,201.00	0.60	156.70	8,197.79	-8.42	-36.93	10.30	0.16	-0.11	-10.43
8,296.00	0.40	224.90	8,292.79	-9.11	-36.96	10.99	0.62	-0.21	71.79
8,391.00	0.80	216.70	8,387.78	-9.87	-37.59	11.79	0.43	0.42	-8.63
8,486.00	0.60	270.40	8,482.78	-10.40	-38.49	12.36	0.69	-0.21	56.53
8,581.00	1.10	269.10	8,577.76	-10.41	-39.90	12.45	0.53	0.53	-1.37
8,676.00	2.60	221.00	8,672.72	-12.05	-42.22	14.20	2.14	1.58	-50.63
8,771.00	3.60	237.70	8,767.58	-15.27	-46.16	17.62	1.41	1.05	17.58
8,866.00	2.90	267.90	8,862.43	-16.96	-51.08	19.55	1.92	-0.74	31.79
8,961.00	2.20	338.80	8,957.36	-15.34	-54.14	18.10	3.17	-0.74	74.63
9,056.00	0.70	58.60	9,052.33	-13.34	-54.31	16.11	2.30	-1.58	84.00
9,150.00	0.50	33.10	9,146.33	-12.70	-53.59	15.43	0.35	-0.21	-27.13
9,245.00	0.40	146.70	9,241.32	-12.63	-53.18	15.34	0.79	-0.11	119.58
9,340.00	0.20	152.30	9,336.32	-13.05	-52.92	15.75	0.21	-0.21	5.89
9,436.00	2.20	36.60	9,432.30	-11.72	-51.75	14.36	2.39	2.08	-120.52
9,531.00	0.60	94.80	9,527.27	-10.30	-50.17	12.86	2.05	-1.68	61.26
9,626.00	1.20	340.20	9,622.26	-9.40	-50.01	11.96	1.63	0.63	-120.63
9,721.00	0.60	66.10	9,717.26	-8.27	-49.89	10.81	1.37	-0.63	90.42
9,816.00	0.50	176.20	9,812.25	-8.48	-49.41	11.00	0.95	-0.11	115.89
9,911.00	0.30	257.40	9,907.25	-8.95	-49.62	11.48	0.57	-0.21	85.47
9,984.00	0.30	264.10	9,980.25	-9.01	-50.00	11.56	0.05	0.00	9.18
10,015.00	1.70	254.40	10,011.25	-9.14	-50.52	11.72	4.53	4.52	-31.29
10,047.00	2.90	273.20	10,043.22	-9.22	-51.79	11.87	4.38	3.75	58.75
10,079.00	1.90	270.00	10,075.19	-9.18	-53.13	11.89	3.15	-3.13	-10.00
10,110.00	3.60	223.70	10,106.16	-9.88	-54.31	12.65	8.61	5.48	-149.35
10,142.00	7.10	201.30	10,138.02	-12.45	-55.73	15.29	12.54	10.94	-70.00
10,174.00	11.60	194.00	10,169.58	-17.42	-57.22	20.33	14.51	14.06	-22.81
10,205.00	14.90	192.90	10,199.75	-24.33	-58.87	27.32	10.68	10.65	-3.55
10,237.00	17.50	193.30	10,230.48	-33.02	-60.89	36.10	8.13	8.13	1.25
10,269.00	21.80	193.30	10,260.61	-43.49	-63.37	46.68	13.44	13.44	0.00
10,301.00	26.50	192.70	10,289.80	-56.25	-66.31	59.57	14.71	14.69	-1.88
10,332.00	31.00	193.20	10,316.97	-70.77	-69.65	74.25	14.54	14.52	1.61
10,364.00	34.70	192.30	10,343.85	-87.70	-73.47	91.35	11.66	11.56	-2.81
10,396.00	38.50	189.80	10,369.54	-106.42	-77.11	110.24	12.75	11.88	-7.81

M3P Directional Services

Survey Report



Company:	Caza Operating, LLC.	Local Co-ordinate Reference:	Site West Copperline 29 State Com #2H
Project:	Lea County, NM	TVD Reference:	WELL @ 3585.50ft
Site:	West Copperline 29 State Com #2H	MD Reference:	WELL @ 3585.50ft
Well:	West Copperline 29 State Com #2H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 5000.1 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,427.00	41.60	186.40	10,393.27	-126.17	-79.90	130.10	12.24	10.00	-10.97
10,459.00	45.10	184.80	10,416.54	-148.02	-82.04	152.04	11.46	10.94	-5.00
10,491.00	49.30	182.20	10,438.27	-171.45	-83.45	175.51	14.41	13.13	-8.13
10,523.00	53.80	181.20	10,458.17	-196.49	-84.19	200.55	14.27	14.06	-3.13
10,554.00	56.70	180.50	10,475.84	-221.96	-84.56	226.00	9.54	9.35	-2.26
10,586.00	59.80	179.80	10,492.67	-249.17	-84.63	253.18	9.86	9.69	-2.19
10,618.00	62.40	179.20	10,508.14	-277.18	-84.38	281.14	8.29	8.13	-1.88
10,649.00	65.90	180.70	10,521.65	-305.07	-84.37	309.00	12.10	11.29	4.84
10,680.00	71.77	184.00	10,532.84	-333.94	-85.57	337.89	21.38	18.94	10.65
10,712.00	73.20	186.20	10,542.47	-364.33	-88.28	368.38	7.93	4.47	6.88
10,744.00	76.00	187.30	10,550.97	-394.96	-91.91	399.16	9.36	8.75	3.44
10,776.00	80.70	187.30	10,557.43	-426.04	-95.89	430.40	14.69	14.69	0.00
10,807.00	84.40	186.40	10,561.45	-456.55	-99.55	461.06	12.28	11.94	-2.90
10,839.00	86.50	186.00	10,563.99	-488.26	-103.00	492.90	6.68	6.56	-1.25
10,871.00	87.80	185.60	10,565.58	-520.06	-106.23	524.82	4.25	4.06	-1.25
10,903.00	88.80	185.30	10,566.53	-551.90	-109.27	556.78	3.26	3.13	-0.94
10,934.00	89.60	185.30	10,566.96	-582.77	-112.13	587.75	2.58	2.58	0.00
11,029.00	90.80	185.20	10,566.63	-677.36	-120.82	682.67	1.27	1.26	-0.11
11,125.00	90.80	183.60	10,565.29	-773.07	-128.19	778.63	1.67	0.00	-1.67
11,220.00	90.40	182.40	10,564.29	-867.93	-133.16	873.62	1.33	-0.42	-1.26
11,315.00	91.60	181.40	10,562.64	-962.86	-136.31	968.59	1.64	1.26	-1.05
11,410.00	91.00	181.90	10,560.48	-1,057.80	-139.04	1,063.54	0.82	-0.63	0.53
11,505.00	90.60	182.50	10,559.16	-1,152.72	-142.69	1,158.52	0.76	-0.42	0.63
11,600.00	90.20	181.60	10,558.49	-1,247.65	-146.09	1,253.50	1.04	-0.42	-0.95
11,695.00	89.50	180.70	10,558.74	-1,342.63	-147.99	1,348.46	1.20	-0.74	-0.95
11,790.00	89.10	180.20	10,559.90	-1,437.62	-148.74	1,443.36	0.67	-0.42	-0.53
11,885.00	89.90	179.80	10,560.73	-1,532.62	-148.74	1,538.23	0.94	0.84	-0.42
11,980.00	89.30	180.90	10,561.39	-1,627.61	-149.32	1,633.13	1.32	-0.63	1.16
12,075.00	89.80	180.70	10,562.14	-1,722.60	-150.65	1,728.06	0.57	0.53	-0.21
12,171.00	88.90	181.90	10,563.23	-1,818.57	-152.82	1,824.01	1.56	-0.94	1.25
12,266.00	89.50	182.60	10,564.56	-1,913.48	-156.55	1,918.99	0.97	0.63	0.74
12,361.00	88.80	182.70	10,565.96	-2,008.37	-160.94	2,013.98	0.74	-0.74	0.11
12,456.00	89.80	182.70	10,567.13	-2,103.26	-165.42	2,108.97	1.05	1.05	0.00
12,551.00	89.50	182.00	10,567.71	-2,198.17	-169.31	2,203.96	0.80	-0.32	-0.74
12,646.00	90.10	181.60	10,568.04	-2,293.13	-172.30	2,298.94	0.76	0.63	-0.42
12,740.00	91.20	181.80	10,566.97	-2,387.08	-175.09	2,392.91	1.19	1.17	0.21
12,835.00	90.50	181.40	10,565.56	-2,482.03	-177.74	2,487.88	0.85	-0.74	-0.42
12,931.00	91.20	181.20	10,564.14	-2,577.99	-179.92	2,583.83	0.76	0.73	-0.21
13,026.00	90.70	181.30	10,562.56	-2,672.96	-181.99	2,678.77	0.54	-0.53	0.11
13,121.00	89.40	181.30	10,562.48	-2,767.93	-184.14	2,773.73	1.37	-1.37	0.00
13,217.00	89.90	180.80	10,563.07	-2,863.91	-185.90	2,869.68	0.74	0.52	-0.52
13,312.00	88.60	180.80	10,564.31	-2,958.89	-187.23	2,964.60	1.37	-1.37	0.00
13,407.00	89.30	180.20	10,566.05	-3,053.87	-188.06	3,059.50	0.97	0.74	-0.63

M3P Directional Services

Survey Report



Company:	Caza Operating, LLC.	Local Co-ordinate Reference:	Site West Copperline 29 State Com #2H
Project:	Lea County, NM	TVD Reference:	WELL @ 3585.50ft
Site:	West Copperline 29 State Com #2H	MD Reference:	WELL @ 3585.50ft
Well:	West Copperline 29 State Com #2H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 5000.1 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
13,503.00	90.50	180.50	10,566.22	-3,149.87	-188.65	3,155.40	1.29	1.25	0.31
13,598.00	92.00	180.20	10,564.15	-3,244.84	-189.23	3,250.27	1.61	1.58	-0.32
13,693.00	91.30	180.70	10,561.41	-3,339.80	-189.97	3,345.14	0.91	-0.74	0.53
13,788.00	88.10	181.50	10,561.91	-3,434.76	-191.79	3,440.08	3.47	-3.37	0.84
13,884.00	88.90	181.70	10,564.42	-3,530.69	-194.47	3,536.02	0.86	0.83	0.21
13,979.00	90.00	181.40	10,565.33	-3,625.65	-197.04	3,630.99	1.20	1.16	-0.32
14,074.00	90.50	181.50	10,564.92	-3,720.62	-199.45	3,725.95	0.54	0.53	0.11
14,169.00	88.90	182.20	10,565.41	-3,815.57	-202.51	3,820.93	1.84	-1.68	0.74
14,265.00	90.30	182.20	10,566.09	-3,911.49	-206.20	3,916.92	1.46	1.46	0.00
14,360.00	90.40	181.70	10,565.50	-4,006.43	-209.43	4,011.90	0.54	0.11	-0.53
14,455.00	89.70	182.40	10,565.42	-4,101.37	-212.83	4,106.89	1.04	-0.74	0.74
14,645.00	90.00	183.50	10,565.92	-4,291.12	-222.61	4,296.89	0.60	0.16	0.58
14,740.00	91.10	183.50	10,565.01	-4,385.93	-228.41	4,391.88	1.16	1.16	0.00
14,836.00	92.50	182.90	10,561.99	-4,481.73	-233.76	4,487.82	1.59	1.46	-0.63
14,903.00	93.50	182.60	10,558.49	-4,548.56	-236.97	4,554.73	1.56	1.49	-0.45
Last M3P MWD Survey									
14,950.00	93.50	182.59	10,555.62	-4,595.43	-239.10	4,601.64	0.02	0.00	-0.02
Projection to TD - PBHL[WC29#2H] v2 - PBHL[WC29#2H] - PBHL[WC29#2H] v3									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
14,903.00	10,558.49	-4,548.56	-236.97	Last M3P MWD Survey
14,950.00	10,555.62	-4,595.43	-239.10	Projection to TD

Checked By: _____ Approved By: _____ Date: _____