



NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 12 2017

RECEIVED

Caza Operating, LLC

Eddy County, NM (NAD 27 NME)

Mad River 13 State

#6H

30-015-44077

OH

Design: OH

Standard Survey Report

01 April, 2017



Company: Caza Operating, LLC
Project: Eddy County, NM (NAD 27 NME)
Site: Mad River 13 State
Well: #6H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #6H
TVD Reference: KB=27' @ 3129.00usft
MD Reference: KB=27' @ 3129.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland District

Project	Eddy County, NM (NAD 27 NME)		
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 Mad River 13 State

Site Position:
From: Map
Position Uncertainty: 0.00 usft
Northing: 442,254.40 usft
Easting: 561,175.70 usft
Slot Radius: 13-3/16 "
Latitude: 32° 12' 56.591 N
Longitude: 104° 8' 7.889 W
Grid Convergence: 0.11 °

Well #6H
Well Position
+N/-S 0.00 usft
+E/-W 0.00 usft
Position Uncertainty 0.00 usft
Northing: 440,746.40 usft
Easting: 561,166.10 usft
Wellhead Elevation: 0.00 usft
Latitude: 32° 12' 41.667 N
Longitude: 104° 8' 8.033 W
Ground Level: 3,102.00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	2/23/2017	7.40	60.03	48,125

Design OH

Audit Notes:

Version: 1.0
Phase: ACTUAL
Tie On Depth: 0.00

Vertical Section:
Depth From (TVD) (usft) 0.00
+N/-S (usft) 0.00
+E/-W (usft) 0.00
Direction (bearing) 267.63

Survey Program Date 4/1/2017

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
199.00	14,640.00	SDI MWD (OH)	MWD+HDGM	OWSG MWD + HDGM

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
199.00	0.54	346.80	199.00	0.91	-0.21	0.18	0.27	0.27	0.00
388.00	0.95	21.44	387.98	3.24	0.16	-0.29	0.31	0.22	18.33
571.00	1.36	25.17	570.94	6.62	1.63	-1.91	0.23	0.22	2.04
697.00	1.27	5.62	696.91	9.36	2.41	-2.79	0.36	-0.07	-15.52
793.00	1.25	348.31	792.89	11.44	2.30	-2.77	0.40	-0.02	-18.03
961.00	0.95	342.64	960.86	14.57	1.51	-2.11	0.19	-0.18	-3.38
1,143.00	0.71	301.87	1,142.84	16.60	0.10	-0.79	0.34	-0.13	-22.40
1,329.00	0.87	300.06	1,328.82	17.92	-2.10	1.36	0.09	0.09	-0.97
1,518.00	1.04	310.86	1,517.80	19.76	-4.64	3.82	0.13	0.09	5.71

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1,709.00	1.09	34.35	1,708.77	22.39	-4.92	3.99	0.74	0.03	43.71
1,898.00	1.08	51.30	1,897.74	24.99	-2.52	1.48	0.17	-0.01	8.97
2,088.00	3.33	95.11	2,087.60	25.62	4.38	-5.43	1.40	1.18	23.06
2,277.00	3.98	97.40	2,276.21	24.29	16.35	-17.34	0.35	0.34	1.21
2,467.00	3.02	94.66	2,465.85	23.03	27.88	-28.80	0.51	-0.51	-1.44
2,657.00	2.95	90.91	2,655.60	22.55	37.75	-38.65	0.11	-0.04	-1.97
2,847.00	2.69	91.73	2,845.37	22.33	47.10	-47.98	0.14	-0.14	0.43
3,037.00	2.55	98.16	3,035.17	21.60	55.74	-56.58	0.17	-0.07	3.38
3,225.00	2.56	100.99	3,222.98	20.20	64.00	-64.78	0.07	0.01	1.51
3,415.00	2.26	101.94	3,412.81	18.62	71.83	-72.54	0.16	-0.16	0.50
3,605.00	2.29	103.33	3,602.66	16.97	79.19	-79.82	0.03	0.02	0.73
3,794.00	2.04	101.20	3,791.53	15.45	86.16	-86.73	0.14	-0.13	-1.13
3,984.00	1.66	108.36	3,981.43	13.92	92.09	-92.59	0.23	-0.20	3.77
4,172.00	1.70	105.73	4,169.35	12.31	97.36	-97.79	0.05	0.02	-1.40
4,362.00	1.65	102.76	4,359.27	10.94	102.74	-103.11	0.05	-0.03	-1.56
4,551.00	1.43	112.51	4,548.20	9.44	107.57	-107.87	0.18	-0.12	5.16
4,741.00	1.22	113.66	4,738.15	7.72	111.62	-111.84	0.11	-0.11	0.61
4,931.00	0.98	111.48	4,928.11	6.31	114.98	-115.14	0.13	-0.13	-1.15
5,121.00	0.95	112.90	5,118.09	5.10	117.95	-118.06	0.02	-0.02	0.75
5,311.00	0.86	121.98	5,308.06	3.73	120.61	-120.66	0.09	-0.05	4.78
5,501.00	0.82	131.72	5,498.04	2.07	122.83	-122.81	0.08	-0.02	5.13
5,691.00	0.88	143.37	5,688.02	0.00	124.72	-124.61	0.10	0.03	6.13
5,867.00	0.97	162.64	5,864.00	-2.51	125.97	-125.76	0.18	0.05	10.95
6,057.00	0.52	167.81	6,053.98	-4.89	126.63	-126.32	0.24	-0.24	2.72
6,247.00	0.73	159.75	6,243.97	-6.86	127.23	-126.84	0.12	0.11	-4.24
6,437.00	1.23	178.90	6,433.94	-10.04	127.69	-127.16	0.31	0.26	10.08
6,626.00	1.07	166.27	6,622.91	-13.78	128.15	-127.47	0.16	-0.08	-6.68
6,816.00	2.05	169.58	6,812.83	-18.85	129.18	-128.29	0.52	0.52	1.74
7,005.00	1.86	172.06	7,001.72	-25.21	130.22	-129.06	0.11	-0.10	1.31
7,194.00	1.15	206.29	7,190.66	-29.95	129.80	-128.45	0.59	-0.38	18.11
7,384.00	0.39	189.02	7,380.64	-32.30	128.85	-127.41	0.41	-0.40	-9.09
7,572.00	1.77	137.18	7,568.61	-35.06	130.73	-129.17	0.83	0.73	-27.57
7,761.00	1.35	144.99	7,757.54	-39.02	133.99	-132.26	0.25	-0.22	4.13
7,912.00	1.40	161.11	7,908.49	-42.22	135.61	-133.75	0.26	0.03	10.68
8,069.00	1.85	205.61	8,065.44	-46.32	135.13	-133.10	0.83	0.29	28.34
8,259.00	0.72	245.94	8,255.39	-49.58	132.72	-130.56	0.73	-0.59	21.23
8,447.95	0.99	265.02	8,444.32	-50.20	130.01	-127.82	0.21	0.14	10.10
8,636.00	1.51	283.11	8,632.32	-49.78	125.97	-123.81	0.34	0.28	9.62
8,826.00	0.58	195.11	8,822.30	-50.14	123.28	-121.11	0.84	-0.49	-46.32
9,016.00	1.04	197.27	9,012.28	-52.72	122.52	-120.24	0.24	0.24	1.14
9,206.00	1.33	197.05	9,202.24	-56.47	121.36	-118.93	0.15	0.15	-0.12
9,351.00	1.15	183.52	9,347.20	-59.53	120.78	-118.22	0.24	-0.12	-9.33
9,407.00	1.14	225.12	9,403.19	-60.49	120.35	-117.75	1.45	-0.02	74.29
9,454.00	6.79	298.87	9,450.07	-59.47	117.58	-115.03	13.96	12.02	156.91

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9,502.00	11.25	294.15	9,497.47	-56.19	110.82	-108.41	9.41	9.29	-9.83
9,549.00	16.25	283.64	9,543.11	-52.76	100.24	-97.98	11.85	10.64	-22.36
9,597.00	22.99	277.24	9,588.31	-49.99	84.40	-82.26	14.72	14.04	-13.33
9,644.00	31.84	275.57	9,629.99	-47.62	62.91	-60.89	18.90	18.83	-3.55
9,692.00	38.46	277.26	9,669.21	-44.50	35.47	-33.60	13.94	13.79	3.52
9,739.00	39.62	275.33	9,705.72	-41.27	6.05	-4.34	3.57	2.47	-4.11
9,787.00	42.16	271.27	9,742.01	-39.49	-25.31	26.92	7.66	5.29	-8.46
9,834.00	48.70	265.26	9,774.99	-40.60	-58.72	60.35	16.62	13.91	-12.79
9,881.00	55.58	266.62	9,803.82	-43.20	-95.71	97.42	14.81	14.64	2.89
9,928.00	60.95	265.38	9,828.53	-46.00	-135.57	137.36	11.64	11.43	-2.64
9,976.00	62.21	264.64	9,851.38	-49.68	-177.63	179.53	2.95	2.63	-1.54
10,023.00	65.76	263.34	9,871.99	-54.10	-219.62	221.67	7.95	7.55	-2.77
10,071.00	69.87	264.59	9,890.11	-58.77	-263.82	266.02	8.90	8.56	2.60
10,118.00	74.26	267.69	9,904.58	-61.76	-308.41	310.70	11.25	9.34	6.60
10,127.93	75.00	268.27	9,907.22	-62.10	-317.98	320.27	9.34	7.44	5.86
LP (MR 13 6H PL2)									
10,165.00	77.77	270.41	9,915.94	-62.51	-354.00	356.28	9.34	7.48	5.77
10,212.00	80.80	270.39	9,924.68	-62.19	-400.18	402.40	6.45	6.45	-0.04
10,260.00	84.45	269.77	9,930.84	-62.12	-447.77	449.95	7.71	7.60	-1.29
10,307.00	87.22	270.54	9,934.25	-62.00	-494.64	496.78	6.12	5.89	1.64
10,354.00	89.09	270.95	9,935.77	-61.38	-541.61	543.68	4.07	3.98	0.87
10,449.00	90.27	270.52	9,936.30	-60.17	-636.60	638.54	1.32	1.24	-0.45
10,544.00	91.01	270.68	9,935.24	-59.17	-731.59	733.41	0.80	0.78	0.17
10,639.00	88.08	268.28	9,935.99	-60.03	-826.56	828.34	3.99	-3.08	-2.53
10,734.00	89.77	269.65	9,937.77	-61.75	-921.53	923.29	2.29	1.78	1.44
10,828.00	87.88	269.06	9,939.70	-62.81	-1,015.50	1,017.22	2.11	-2.01	-0.63
10,923.00	91.01	270.14	9,940.62	-63.47	-1,110.48	1,112.15	3.49	3.29	1.14
11,017.00	91.51	269.91	9,938.55	-63.43	-1,204.45	1,206.04	0.59	0.53	-0.24
11,112.00	88.15	268.74	9,938.84	-64.55	-1,299.43	1,300.99	3.75	-3.54	-1.23
11,207.00	90.44	268.82	9,940.00	-66.57	-1,394.40	1,395.95	2.41	2.41	0.08
11,302.00	92.15	269.02	9,937.86	-68.36	-1,489.35	1,490.90	1.81	1.80	0.21
11,398.00	92.52	268.08	9,933.95	-70.79	-1,585.24	1,586.81	1.05	0.39	-0.98
11,492.00	92.79	267.70	9,929.59	-74.24	-1,679.07	1,680.71	0.50	0.29	-0.40
11,588.00	91.48	267.20	9,926.02	-78.51	-1,774.91	1,776.64	1.46	-1.36	-0.52
11,683.00	91.64	266.14	9,923.43	-84.03	-1,869.71	1,871.59	1.13	0.17	-1.12
11,778.00	91.28	265.41	9,921.01	-91.02	-1,964.42	1,966.51	0.86	-0.38	-0.77
11,873.00	92.32	265.79	9,918.02	-98.31	-2,059.09	2,061.40	1.17	1.09	0.40
11,967.00	90.57	265.09	9,915.65	-105.78	-2,152.76	2,155.30	2.01	-1.86	-0.74
12,063.00	88.86	265.82	9,916.13	-113.39	-2,248.46	2,251.22	1.94	-1.78	0.76
12,158.00	88.96	267.28	9,917.94	-119.10	-2,343.26	2,346.18	1.54	0.11	1.54
12,253.00	89.77	267.98	9,918.99	-123.03	-2,438.18	2,441.18	1.13	0.85	0.74
12,348.00	90.61	269.44	9,918.68	-125.17	-2,533.15	2,536.16	1.77	0.88	1.54
12,442.00	91.75	268.69	9,916.74	-126.70	-2,627.11	2,630.10	1.45	1.21	-0.80

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12,537.00	90.34	267.86	9,915.01	-129.56	-2,722.05	2,725.08	1.72	-1.48	-0.87
12,631.00	90.60	267.63	9,914.24	-133.26	-2,815.97	2,819.08	0.37	0.28	-0.24
12,726.00	89.36	267.52	9,914.27	-137.28	-2,910.89	2,914.07	1.31	-1.31	-0.12
12,821.00	92.48	268.84	9,912.74	-140.30	-3,005.81	3,009.04	3.57	3.28	1.39
12,916.00	92.86	268.56	9,908.32	-142.45	-3,100.69	3,103.92	0.50	0.40	-0.29
13,011.00	93.43	268.88	9,903.11	-144.57	-3,195.52	3,198.76	0.69	0.60	0.34
13,106.00	90.57	266.90	9,899.79	-148.07	-3,290.38	3,293.69	3.66	-3.01	-2.08
13,201.00	90.20	266.42	9,899.15	-153.60	-3,385.22	3,388.67	0.64	-0.39	-0.51
13,295.00	91.41	267.97	9,897.83	-158.20	-3,479.09	3,482.66	2.09	1.29	1.65
13,390.00	91.72	267.73	9,895.24	-161.76	-3,573.99	3,577.62	0.41	0.33	-0.25
13,484.00	93.83	268.30	9,890.69	-165.01	-3,667.82	3,671.50	2.32	2.24	0.61
13,580.00	92.32	267.42	9,885.54	-168.59	-3,763.61	3,767.36	1.82	-1.57	-0.92
13,674.00	94.09	268.07	9,880.28	-172.29	-3,857.38	3,861.21	2.01	1.88	0.69
13,770.00	91.44	266.43	9,875.65	-176.89	-3,953.15	3,957.08	3.25	-2.76	-1.71
13,864.00	91.38	266.62	9,873.34	-182.59	-4,046.95	4,051.04	0.21	-0.06	0.20
13,959.00	91.21	265.59	9,871.19	-189.04	-4,141.70	4,145.98	1.10	-0.18	-1.08
14,054.00	92.72	267.30	9,867.93	-194.92	-4,236.46	4,240.89	2.40	1.59	1.80
14,149.00	92.89	266.91	9,863.29	-199.72	-4,331.22	4,335.78	0.45	0.18	-0.41
14,244.00	93.87	269.06	9,857.68	-203.05	-4,425.99	4,430.60	2.48	1.03	2.26
14,338.00	94.37	268.80	9,850.93	-204.80	-4,519.73	4,524.34	0.60	0.53	-0.28
14,432.00	91.68	268.72	9,845.97	-206.83	-4,613.57	4,618.18	2.86	-2.86	-0.09
14,527.00	93.73	268.44	9,841.49	-209.18	-4,708.43	4,713.05	2.18	2.16	-0.29
14,584.00	93.94	268.22	9,837.67	-210.84	-4,765.28	4,769.92	0.53	0.37	-0.39
Final MWD Survey (14584.00' MD)									
14,640.00	93.94	268.22	9,833.83	-212.58	-4,821.12	4,825.79	0.00	0.00	0.00
Final PTB (14640.00' MD) - PBHL (MR 13 6H PL5)									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
14,584.00	9,837.67	-210.84	-4,765.28	Final MWD Survey (14584.00' MD)
14,640.00	9,833.83	-212.58	-4,821.12	Final PTB (14640.00' MD)

Checked By: _____ Approved By: _____ Date: _____

This survey is correct to the best of my knowledge and is supported by actual field data.

Steve Morris

