



Caza Operating LLC

Mad River 13 State 9H

Mad River 13 State 9H

Mad River 13 State 9H

Mad River 13 State 9H

Plan: 190214 Mad River 13 State 9H

Morcor Standard Plan

14 February, 2019

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DISTRICT II-ARTESIA O.C.D.



Morcor Engineering
Morcor Standard Plan

Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Mad River 13 State 9H
Project:	Mad River 13 State 9H	TVD Reference:	WELL @ 3124.0usft (Original Well Elev)
Site:	Mad River 13 State 9H	MD Reference:	WELL @ 3124.0usft (Original Well Elev)
Well:	Mad River 13 State 9H	North Reference:	Grid
Wellbore:	Mad River 13 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	190214 Mad River 13 State 9H	Database:	EDM 5000.1 Single User Db

Project	Mad River 13 State 9H		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Mad River 13 State 9H		
Site Position:		Northing:	440,923.64 usft
From:	Lat/Long	Easting:	602,346.32 usft
Position Uncertainty:	1.0 usft	Slot Radius:	17-1/2 "
		Latitude:	32° 12' 43.279 N
		Longitude:	104° 8' 9.845 W
		Grid Convergence:	0.11 °

Well	Mad River 13 State 9H		
Well Position	+N/-S	0.0 usft	Northing: 440,923.64 usft
	+E/-W	0.0 usft	Easting: 602,346.32 usft
Position Uncertainty	1.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 12' 43.279 N
		Longitude:	104° 8' 9.845 W
		Ground Level:	3,102.0 usft

Wellbore	Mad River 13 State 9H		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	2/14/2019	(°)
			6.90
			Dip Angle (°)
			59.89
			Field Strength (nT)
			47,788

Design	190214 Mad River 13 State 9H		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction (°)
			268.35

Survey Tool Program	Date	2/14/2019		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
0.0	13,465.0	190214 Mad River 13 State 9H (Mad River	MWD	MWD - Standard



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Planned Survey											
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0.0	0.00	0.00	0.0	-3,124.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
100.0	0.00	93.50	100.0	-3,024.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
120.0	0.00	93.50	120.0	-3,004.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
20"											
200.0	0.00	93.50	200.0	-2,924.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
300.0	0.00	93.50	300.0	-2,824.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
400.0	0.00	93.50	400.0	-2,724.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
500.0	0.00	93.50	500.0	-2,624.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
600.0	0.00	93.50	600.0	-2,524.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
700.0	0.00	93.50	700.0	-2,424.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
728.0	0.00	93.50	728.0	-2,396.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
13 3/8"											
753.0	0.00	93.50	753.0	-2,371.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
Salado											
800.0	0.00	93.50	800.0	-2,324.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
900.0	0.00	93.50	900.0	-2,224.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
1,000.0	0.00	93.50	1,000.0	-2,124.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
1,100.0	0.00	93.50	1,100.0	-2,024.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
1,200.0	0.00	93.50	1,200.0	-1,924.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
1,300.0	0.00	93.50	1,300.0	-1,824.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
1,400.0	0.00	93.50	1,400.0	-1,724.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
1,500.0	0.00	93.50	1,500.0	-1,624.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
1,600.0	0.00	93.50	1,600.0	-1,524.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
1,700.0	0.00	93.50	1,700.0	-1,424.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
1,800.0	0.00	93.50	1,800.0	-1,324.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
1,900.0	0.00	93.50	1,900.0	-1,224.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,000.0	0.00	93.50	2,000.0	-1,124.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,100.0	0.00	93.50	2,100.0	-1,024.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	



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Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)	
2,200.0	0.00	93.50	2,200.0	-924.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,208.0	0.00	93.50	2,208.0	-916.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
Base of Salt											
2,300.0	0.00	93.50	2,300.0	-824.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,388.0	0.00	93.50	2,388.0	-736.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
9 5/8"											
2,400.0	0.00	93.50	2,400.0	-724.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,413.0	0.00	93.50	2,413.0	-711.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
Delaware											
2,500.0	0.00	93.50	2,500.0	-624.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,600.0	0.00	93.50	2,600.0	-524.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,700.0	0.00	93.50	2,700.0	-424.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,800.0	0.00	93.50	2,800.0	-324.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
2,900.0	0.00	93.50	2,900.0	-224.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,000.0	0.00	93.50	3,000.0	-124.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,048.0	0.00	93.50	3,048.0	-76.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
Cherry Canyon											
3,100.0	0.00	93.50	3,100.0	-24.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,200.0	0.00	93.50	3,200.0	76.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,300.0	0.00	93.50	3,300.0	176.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,400.0	0.00	93.50	3,400.0	276.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,500.0	0.00	93.50	3,500.0	376.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,600.0	0.00	93.50	3,600.0	476.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,700.0	0.00	93.50	3,700.0	576.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,800.0	0.00	93.50	3,800.0	676.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
3,900.0	0.00	93.50	3,900.0	776.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,000.0	0.00	93.50	4,000.0	876.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,100.0	0.00	93.50	4,100.0	976.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	



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4,200.0	0.00	93.50	4,200.0	1,076.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,300.0	0.00	93.50	4,300.0	1,176.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,349.0	0.00	93.50	4,349.0	1,225.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
Brushy Canyon											
4,400.0	0.00	93.50	4,400.0	1,276.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,500.0	0.00	93.50	4,500.0	1,376.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,600.0	0.00	93.50	4,600.0	1,476.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,700.0	0.00	93.50	4,700.0	1,576.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,800.0	0.00	93.50	4,800.0	1,676.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
4,900.0	0.00	93.50	4,900.0	1,776.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,000.0	0.00	93.50	5,000.0	1,876.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,100.0	0.00	93.50	5,100.0	1,976.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,200.0	0.00	93.50	5,200.0	2,076.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,300.0	0.00	93.50	5,300.0	2,176.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,400.0	0.00	93.50	5,400.0	2,276.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,500.0	0.00	93.50	5,500.0	2,376.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,600.0	0.00	93.50	5,600.0	2,476.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,700.0	0.00	93.50	5,700.0	2,576.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,800.0	0.00	93.50	5,800.0	2,676.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,900.0	0.00	93.50	5,900.0	2,776.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
5,939.0	0.00	93.50	5,939.0	2,815.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
Bone Spring											
5,950.0	0.00	93.50	5,950.0	2,826.0	0.0	0.0	602,346.32	440,923.64	0.00	0.00	
Start Build 3.00											
6,000.0	1.50	93.50	6,000.0	2,876.0	0.0	0.7	602,346.97	440,923.60	-0.65	3.00	
6,100.0	4.50	93.50	6,099.8	2,975.8	-0.4	5.9	602,352.19	440,923.28	-5.86	3.00	



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Well: Mad River 13 State 9H
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Design: 190214 Mad River 13 State 9H

Local Co-ordinate Reference: Well Mad River 13 State 9H
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Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
6,150.0	6.00	93.50	6,149.6	3,025.6	-0.6	10.4	602,356.76	440,923.00	-10.42	3.00
Start 1336.0 hold at 6150.0 MD										
6,200.0	6.00	93.50	6,199.4	3,075.4	-1.0	15.7	602,361.98	440,922.68	-15.63	0.00
6,300.0	6.00	93.50	6,298.8	3,174.8	-1.6	26.1	602,372.41	440,922.04	-26.04	0.00
6,400.0	6.00	93.50	6,398.3	3,274.3	-2.2	36.5	602,382.84	440,921.41	-36.45	0.00
6,500.0	6.00	93.50	6,497.7	3,373.7	-2.9	47.0	602,393.28	440,920.77	-46.86	0.00
6,600.0	6.00	93.50	6,597.2	3,473.2	-3.5	57.4	602,403.71	440,920.13	-57.27	0.00
6,700.0	6.00	93.50	6,696.6	3,572.6	-4.1	67.8	602,414.14	440,919.49	-67.68	0.00
6,800.0	6.00	93.50	6,796.1	3,672.1	-4.8	78.3	602,424.58	440,918.85	-78.09	0.00
6,900.0	6.00	93.50	6,895.5	3,771.5	-5.4	88.7	602,435.01	440,918.22	-88.50	0.00
6,900.5	6.00	93.50	6,896.0	3,772.0	-5.4	88.7	602,435.06	440,918.21	-88.55	0.00
1st Bone Spring Sand										
7,000.0	6.00	93.50	6,995.0	3,871.0	-6.1	99.1	602,445.44	440,917.58	-98.91	0.00
7,100.0	6.00	93.50	7,094.4	3,970.4	-6.7	109.6	602,455.88	440,916.94	-109.32	0.00
7,200.0	6.00	93.50	7,193.9	4,069.9	-7.3	120.0	602,466.31	440,916.30	-119.73	0.00
7,300.0	6.00	93.50	7,293.3	4,169.3	-8.0	130.4	602,476.74	440,915.66	-130.14	0.00
7,400.0	6.00	93.50	7,392.8	4,268.8	-8.6	140.9	602,487.18	440,915.03	-140.55	0.00
7,486.0	6.00	93.50	7,478.3	4,354.3	-9.2	149.8	602,496.15	440,914.48	-149.51	0.00
Start Drop -3.00										
7,500.0	5.58	93.50	7,492.2	4,368.2	-9.3	151.2	602,497.56	440,914.39	-150.91	3.00
7,600.0	2.58	93.50	7,592.0	4,468.0	-9.7	158.3	602,504.66	440,913.96	-158.00	3.00
7,649.0	1.11	93.50	7,641.0	4,517.0	-9.8	159.9	602,506.24	440,913.86	-159.57	3.00
2nd Bone Spring Sand										
7,686.0	0.00	0.00	7,678.0	4,554.0	-9.8	160.3	602,506.59	440,913.84	-159.93	3.00
Start 100.0 hold at 7686.0 MD										
7,700.0	0.00	268.50	7,692.0	4,568.0	-9.8	160.3	602,506.59	440,913.84	-159.93	0.00
7,786.0	0.00	268.50	7,778.0	4,654.0	-9.8	160.3	602,506.59	440,913.84	-159.93	0.00
Start Build 8.00										



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7,800.0	1.12	268.50	7,791.9	4,667.9	-9.8	160.1	602,506.46	440,913.83	-159.79	8.00
7,886.0	8.00	268.50	7,877.6	4,753.6	-10.0	153.3	602,499.62	440,913.66	-152.96	8.00
Start Build 9.00										
7,900.0	9.26	268.50	7,891.5	4,767.5	-10.0	151.2	602,497.52	440,913.60	-150.85	9.00
7,986.0	17.00	268.50	7,975.2	4,851.2	-10.6	131.7	602,478.01	440,913.09	-131.33	9.00
Start Build 10.00										
8,000.0	18.40	268.50	7,988.5	4,864.5	-10.7	127.4	602,473.76	440,912.98	-127.08	10.00
8,086.0	27.00	268.50	8,067.8	4,943.8	-11.5	94.3	602,440.61	440,912.11	-93.92	10.00
Start Build 11.00										
8,100.0	28.54	268.50	8,080.1	4,956.1	-11.7	87.8	602,434.09	440,911.94	-87.40	11.00
8,186.0	38.00	268.50	8,152.0	5,028.0	-12.9	40.7	602,386.98	440,910.71	-40.27	11.00
Start Build 12.00										
8,200.0	39.68	268.50	8,162.9	5,038.9	-13.2	31.9	602,378.20	440,910.48	-31.49	12.00
8,286.0	50.00	268.50	8,223.8	5,099.8	-14.8	-28.7	602,317.67	440,908.89	29.07	12.00
Start Build 12.00										
8,300.0	51.68	268.50	8,232.6	5,108.6	-15.0	-39.5	602,306.81	440,908.61	39.92	12.00
8,370.3	60.12	268.50	8,272.0	5,148.0	-16.6	-97.7	602,248.66	440,907.08	98.10	12.00
Harkey Sand										
8,400.0	63.68	268.50	8,286.0	5,162.0	-17.2	-123.8	602,222.49	440,906.40	124.27	12.00
8,500.0	75.68	268.50	8,320.6	5,196.6	-19.7	-217.4	602,128.92	440,903.95	217.88	12.00
8,586.0	86.00	268.50	8,334.3	5,210.3	-21.9	-302.2	602,044.16	440,901.73	302.67	12.00
Start Build 12.66										
8,600.0	87.77	268.50	8,335.1	5,211.1	-22.3	-316.1	602,030.18	440,901.36	316.65	12.66
8,630.0	91.57	268.50	8,335.2	5,211.2	-23.1	-346.1	602,000.20	440,900.58	346.64	12.66
Start 4835.0 hold at 8630.0 MD										
8,700.0	91.57	268.50	8,333.3	5,209.3	-24.9	-416.1	601,930.25	440,898.75	416.61	0.00
8,800.0	91.57	268.50	8,330.6	5,206.6	-27.5	-516.0	601,830.32	440,896.13	516.57	0.00
8,900.0	91.57	268.50	8,327.8	5,203.8	-30.1	-615.9	601,730.39	440,893.51	616.54	0.00



Morcor Engineering
Morcor Standard Plan

Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Mad River 13 State 9H
Project:	Mad River 13 State 9H	TVD Reference:	WELL @ 3124.0usft (Original Well Elev)
Site:	Mad River 13 State 9H	MD Reference:	WELL @ 3124.0usft (Original Well Elev)
Well:	Mad River 13 State 9H	North Reference:	Grid
Wellbore:	Mad River 13 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	190214 Mad River 13 State 9H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)	
9,000.0	91.57	268.50	8,325.1	5,201.1	-32.7	-715.9	601,630.47	440,890.90	716.50	0.00	
9,100.0	91.57	268.50	8,322.4	5,198.4	-35.4	-815.8	601,530.54	440,888.28	816.46	0.00	
9,200.0	91.57	268.50	8,319.6	5,195.6	-38.0	-915.7	601,430.61	440,885.66	916.42	0.00	
9,300.0	91.57	268.50	8,316.9	5,192.9	-40.6	-1,015.6	601,330.68	440,883.05	1,016.39	0.00	
9,400.0	91.57	268.50	8,314.1	5,190.1	-43.2	-1,115.6	601,230.75	440,880.43	1,116.35	0.00	
9,500.0	91.57	268.50	8,311.4	5,187.4	-45.8	-1,215.5	601,130.82	440,877.81	1,216.31	0.00	
9,600.0	91.57	268.50	8,308.7	5,184.7	-48.4	-1,315.4	601,030.90	440,875.20	1,316.27	0.00	
9,700.0	91.57	268.50	8,305.9	5,181.9	-51.1	-1,415.3	600,930.97	440,872.58	1,416.23	0.00	
9,800.0	91.57	268.50	8,303.2	5,179.2	-53.7	-1,515.3	600,831.04	440,869.96	1,516.20	0.00	
9,900.0	91.57	268.50	8,300.4	5,176.4	-56.3	-1,615.2	600,731.11	440,867.35	1,616.16	0.00	
10,000.0	91.57	268.50	8,297.7	5,173.7	-58.9	-1,715.1	600,631.18	440,864.73	1,716.12	0.00	
10,100.0	91.57	268.50	8,295.0	5,171.0	-61.5	-1,815.1	600,531.26	440,862.11	1,816.08	0.00	
10,200.0	91.57	268.50	8,292.2	5,168.2	-64.1	-1,915.0	600,431.33	440,859.49	1,916.04	0.00	
10,300.0	91.57	268.50	8,289.5	5,165.5	-66.8	-2,014.9	600,331.40	440,856.88	2,016.01	0.00	
10,400.0	91.57	268.50	8,286.7	5,162.7	-69.4	-2,114.8	600,231.47	440,854.26	2,115.97	0.00	
10,500.0	91.57	268.50	8,284.0	5,160.0	-72.0	-2,214.8	600,131.54	440,851.64	2,215.93	0.00	
10,600.0	91.57	268.50	8,281.3	5,157.3	-74.6	-2,314.7	600,031.61	440,849.03	2,315.89	0.00	
10,700.0	91.57	268.50	8,278.5	5,154.5	-77.2	-2,414.6	599,931.69	440,846.41	2,415.85	0.00	
10,800.0	91.57	268.50	8,275.8	5,151.8	-79.8	-2,514.6	599,831.76	440,843.79	2,515.82	0.00	
10,900.0	91.57	268.50	8,273.0	5,149.0	-82.5	-2,614.5	599,731.83	440,841.18	2,615.78	0.00	
11,000.0	91.57	268.50	8,270.3	5,146.3	-85.1	-2,714.4	599,631.90	440,838.56	2,715.74	0.00	
11,100.0	91.57	268.50	8,267.6	5,143.6	-87.7	-2,814.3	599,531.97	440,835.94	2,815.70	0.00	
11,200.0	91.57	268.50	8,264.8	5,140.8	-90.3	-2,914.3	599,432.04	440,833.33	2,915.66	0.00	
11,300.0	91.57	268.50	8,262.1	5,138.1	-92.9	-3,014.2	599,332.12	440,830.71	3,015.63	0.00	
11,400.0	91.57	268.50	8,259.4	5,135.4	-95.5	-3,114.1	599,232.19	440,828.09	3,115.59	0.00	
11,500.0	91.57	268.50	8,256.6	5,132.6	-98.2	-3,214.1	599,132.26	440,825.48	3,215.55	0.00	
11,600.0	91.57	268.50	8,253.9	5,129.9	-100.8	-3,314.0	599,032.33	440,822.86	3,315.51	0.00	



Morcor Engineering
Morcor Standard Plan

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Site:	Mad River 13 State 9H	MD Reference:	WELL @ 3124.0usft (Original Well Elev)
Well:	Mad River 13 State 9H	North Reference:	Grid
Wellbore:	Mad River 13 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	190214 Mad River 13 State 9H	Database:	EDM 5000.1 Single User Db

Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
11,700.0	91.57	268.50	8,251.1	5,127.1	-103.4	-3,413.9	598,932.40	440,820.24	3,415.48	0.00
11,800.0	91.57	268.50	8,248.4	5,124.4	-106.0	-3,513.8	598,832.48	440,817.63	3,515.44	0.00
11,900.0	91.57	268.50	8,245.7	5,121.7	-108.6	-3,613.8	598,732.55	440,815.01	3,615.40	0.00
12,000.0	91.57	268.50	8,242.9	5,118.9	-111.2	-3,713.7	598,632.62	440,812.39	3,715.36	0.00
12,100.0	91.57	268.50	8,240.2	5,116.2	-113.9	-3,813.6	598,532.69	440,809.78	3,815.32	0.00
12,200.0	91.57	268.50	8,237.4	5,113.4	-116.5	-3,913.6	598,432.76	440,807.16	3,915.29	0.00
12,300.0	91.57	268.50	8,234.7	5,110.7	-119.1	-4,013.5	598,332.83	440,804.54	4,015.25	0.00
12,400.0	91.57	268.50	8,232.0	5,108.0	-121.7	-4,113.4	598,232.91	440,801.93	4,115.21	0.00
12,500.0	91.57	268.50	8,229.2	5,105.2	-124.3	-4,213.3	598,132.98	440,799.31	4,215.17	0.00
12,600.0	91.57	268.50	8,226.5	5,102.5	-126.9	-4,313.3	598,033.05	440,796.69	4,315.13	0.00
12,700.0	91.57	268.50	8,223.7	5,099.7	-129.6	-4,413.2	597,933.12	440,794.08	4,415.10	0.00
12,800.0	91.57	268.50	8,221.0	5,097.0	-132.2	-4,513.1	597,833.19	440,791.46	4,515.06	0.00
12,900.0	91.57	268.50	8,218.3	5,094.3	-134.8	-4,613.1	597,733.27	440,788.84	4,615.02	0.00
13,000.0	91.57	268.50	8,215.5	5,091.5	-137.4	-4,713.0	597,633.34	440,786.23	4,714.98	0.00
13,100.0	91.57	268.50	8,212.8	5,088.8	-140.0	-4,812.9	597,533.41	440,783.61	4,814.94	0.00
13,200.0	91.57	268.50	8,210.0	5,086.0	-142.6	-4,912.8	597,433.48	440,780.99	4,914.91	0.00
13,300.0	91.57	268.50	8,207.3	5,083.3	-145.3	-5,012.8	597,333.55	440,778.38	5,014.87	0.00
13,400.0	91.57	268.50	8,204.6	5,080.6	-147.9	-5,112.7	597,233.62	440,775.76	5,114.83	0.00
13,465.0	91.57	268.50	8,202.8	5,078.8	-149.6	-5,177.6	597,168.67	440,774.06	5,179.81	0.00
TD at 13465.0 - 5 1/2"										

Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Mad River 13 State 9H
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Site:	Mad River 13 State 9H	MD Reference:	WELL @ 3124.0usft (Original Well Elev)
Well:	Mad River 13 State 9H	North Reference:	Grid
Wellbore:	Mad River 13 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	190214 Mad River 13 State 9H	Database:	EDM 5000.1 Single User Db

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
120.0	120.0	20"	20	26	
2,388.0	2,388.0	9 5/8"	9-5/8	12-1/4	
13,465.0	8,202.8	5 1/2"	5-1/2	8-3/4	
728.0	728.0	13 3/8"	13-3/8	17-1/2	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,649.0	7,641.0	2nd Bone Spring Sand		0.00	
8,370.3	8,272.0	Harkey Sand		0.00	
2,413.0	2,413.0	Delaware		0.00	
753.0	753.0	Salado		0.00	
5,939.0	5,939.0	Bone Spring		0.00	
2,208.0	2,208.0	Base of Salt		0.00	
4,349.0	4,349.0	Brushy Canyon		0.00	
6,900.5	6,896.0	1st Bone Spring Sand		0.00	
3,048.0	3,048.0	Cherry Canyon		0.00	



Morcor Engineering

Morcor Standard Plan

Company: Caza Operating LLC
Project: Mad River 13 State 9H
Site: Mad River 13 State 9H
Well: Mad River 13 State 9H
Wellbore: Mad River 13 State 9H
Design: 190214 Mad River 13 State 9H

Local Co-ordinate Reference: Well Mad River 13 State 9H
TVD Reference: WELL @ 3124.0usft (Original Well Elev)
MD Reference: WELL @ 3124.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,950.0	5,950.0	0.0	0.0	Start Build 3.00
6,150.0	6,149.6	-0.6	10.4	Start 1336.0 hold at 6150.0 MD
7,486.0	7,478.3	-9.2	149.8	Start Drop -3.00
7,686.0	7,678.0	-9.8	160.3	Start 100.0 hold at 7686.0 MD
7,786.0	7,778.0	-9.8	160.3	Start Build 8.00
7,886.0	7,877.6	-10.0	153.3	Start Build 9.00
7,986.0	7,975.2	-10.6	131.7	Start Build 10.00
8,086.0	8,067.8	-11.5	94.3	Start Build 11.00
8,186.0	8,152.0	-12.9	40.7	Start Build 12.00
8,286.0	8,223.8	-14.8	-28.7	Start Build 12.00
8,586.0	8,334.3	-21.9	-302.2	Start Build 12.66
8,630.0	8,335.2	-23.1	-346.1	Start 4835.0 hold at 8630.0 MD
13,465.0	8,202.8	-149.6	-5,177.6	TD at 13465.0

Checked By: _____ Approved By: _____ Date: _____