

NM OIL CONSERVATION
ARTESIA DISTRICT

SEP 07 2018

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Caza
Petroleum

Caza Operating LLC

Alisa Ogden 15 - 2H

Alisa Ogden 15 - 2H

Alisa Ogden 15 - 2H

Alisa Ogden 15 - 2H

30-015-45234

Plan: 180907 Alisa Ogden 15 - 2H

Morcor Standard Plan

07 September, 2018

MORCOR
ENGINEERING

10/29/18
CT



Morcor Engineering
Morcor Standard Plan

MORCOR
Engineering, Inc.

Company: Caza Operating LLC
Project: Alisa Ogden 15 - 2H
Site: Alisa Ogden 15 - 2H
Well: Alisa Ogden 15 - 2H
Wellbore: Alisa Ogden 15 - 2H
Design: 180907 Alisa Ogden 15 - 2H

Local Co-ordinate Reference: Well Alisa Ogden 15 - 2H
TVD Reference: WELL @ 3149.0usft (Original Well Elev)
MD Reference: WELL @ 3149.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project Alisa Ogden 15 - 2H

Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site Alisa Ogden 15 - 2H

Site Position:		Northing:	473,535.82 usft	Latitude:	32° 18' 6.185 N
From:	Lat/Long	Easting:	591,709.72 usft	Longitude:	104° 10' 13.080 W
Position Uncertainty:	1.0 usft	Slot Radius:	17-1/2 "	Grid Convergence:	0.09 "

Well Alisa Ogden 15 - 2H

Well Position	+N-S	0.0 usft	Northing:	473,535.82 usft	Latitude:	32° 18' 6.185 N
	+E-W	0.0 usft	Easting:	591,709.72 usft	Longitude:	104° 10' 13.080 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,127.0 usft

Wellbore Alisa Ogden 15 - 2H

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/7/2018	6.98	59.98	47,881

Design 180907 Alisa Ogden 15 - 2H

Audit Notes:

Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)
	0.0	0.0	0.0	273.45

Survey Tool Program Date 9/7/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	14,179.0	180907 Alisa Ogden 15 - 2H (Alisa Ogden		



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0.0	0.00	0.00	0.0	-3,149.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
100.0	0.00	37.20	100.0	-3,049.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
120.0	0.00	37.20	120.0	-3,029.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
20" Conductor										
200.0	0.00	37.20	200.0	-2,949.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
300.0	0.00	37.20	300.0	-2,849.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
400.0	0.00	37.20	400.0	-2,749.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
418.0	0.00	37.20	418.0	-2,731.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
13 3/8" Surface Casing										
443.0	0.00	37.20	443.0	-2,708.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
Salado										
500.0	0.00	37.20	500.0	-2,649.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
600.0	0.00	37.20	600.0	-2,549.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
700.0	0.00	37.20	700.0	-2,449.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
800.0	0.00	37.20	800.0	-2,349.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
900.0	0.00	37.20	900.0	-2,249.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
1,000.0	0.00	37.20	1,000.0	-2,149.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
1,100.0	0.00	37.20	1,100.0	-2,049.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
1,200.0	0.00	37.20	1,200.0	-1,949.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
1,217.0	0.00	37.20	1,217.0	-1,932.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
Top of Salt										
1,300.0	0.00	37.20	1,300.0	-1,849.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
1,400.0	0.00	37.20	1,400.0	-1,749.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
1,500.0	0.00	37.20	1,500.0	-1,649.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
1,600.0	0.00	37.20	1,600.0	-1,549.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
1,700.0	0.00	37.20	1,700.0	-1,449.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
1,800.0	0.00	37.20	1,800.0	-1,349.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
1,900.0	0.00	37.20	1,900.0	-1,249.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00



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Morcor Standard Plan

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1,919.0	0.00	37.20	1,919.0	-1,230.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
Base of Salt										
2,000.0	0.00	37.20	2,000.0	-1,149.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
2,100.0	0.00	37.20	2,100.0	-1,049.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
2,110.0	0.00	37.20	2,110.0	-1,039.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
Delaware										
2,200.0	0.00	37.20	2,200.0	-949.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
2,300.0	0.00	37.20	2,300.0	-849.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
2,400.0	0.00	37.20	2,400.0	-749.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
2,500.0	0.00	37.20	2,500.0	-649.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
2,600.0	0.00	37.20	2,600.0	-549.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
2,700.0	0.00	37.20	2,700.0	-449.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
2,800.0	0.00	37.20	2,800.0	-349.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
2,851.0	0.00	37.20	2,851.0	-298.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
Cherry Canyon										
2,900.0	0.00	37.20	2,900.0	-249.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
3,000.0	0.00	37.20	3,000.0	-149.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
3,100.0	0.00	37.20	3,100.0	-49.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
3,200.0	0.00	37.20	3,200.0	51.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
3,300.0	0.00	37.20	3,300.0	151.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
3,400.0	0.00	37.20	3,400.0	251.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
3,500.0	0.00	37.20	3,500.0	351.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
3,600.0	0.00	37.20	3,600.0	451.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
3,700.0	0.00	37.20	3,700.0	551.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
3,800.0	0.00	37.20	3,800.0	651.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
3,900.0	0.00	37.20	3,900.0	751.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
4,000.0	0.00	37.20	4,000.0	851.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00



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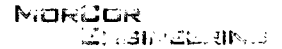
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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
4,025.0	0.00	37.20	4,025.0	876.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
Brushy Canyon										
4,100.0	0.00	37.20	4,100.0	951.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
4,200.0	0.00	37.20	4,200.0	1,051.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
4,300.0	0.00	37.20	4,300.0	1,151.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
4,400.0	0.00	37.20	4,400.0	1,251.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
4,430.0	0.00	37.20	4,430.0	1,281.0	0.0	0.0	591,709.72	473,535.82	0.00	0.00
Start Build 3.00										
4,500.0	2.10	37.20	4,500.0	1,351.0	1.0	0.8	591,710.50	473,536.84	-0.71	3.00
4,600.0	5.10	37.20	4,599.8	1,450.8	6.0	4.6	591,714.29	473,541.84	-4.20	3.00
4,630.0	6.00	37.20	4,629.6	1,480.6	8.3	6.3	591,716.05	473,544.15	-5.81	3.00
Start 3852.0 hold at 4630.0 MD										
4,700.0	6.00	37.20	4,699.3	1,550.3	14.2	10.7	591,720.47	473,549.98	-9.88	0.00
4,800.0	6.00	37.20	4,798.7	1,649.7	22.5	17.1	591,726.79	473,556.31	-15.69	0.00
4,900.0	6.00	37.20	4,898.2	1,749.2	30.8	23.4	591,733.11	473,566.63	-21.49	0.00
5,000.0	6.00	37.20	4,997.6	1,848.6	39.1	29.7	591,739.43	473,574.96	-27.30	0.00
5,100.0	6.00	37.20	5,097.1	1,948.1	47.5	36.0	591,745.75	473,583.29	-33.11	0.00
5,200.0	6.00	37.20	5,196.5	2,047.5	55.8	42.3	591,752.07	473,591.61	-38.92	0.00
5,300.0	6.00	37.20	5,296.0	2,147.0	64.1	48.7	591,758.39	473,599.94	-44.72	0.00
5,400.0	6.00	37.20	5,395.4	2,246.4	72.4	55.0	591,764.71	473,608.26	-50.53	0.00
5,500.0	6.00	37.20	5,494.9	2,345.9	80.8	61.3	591,771.03	473,616.59	-56.34	0.00
5,594.6	6.00	37.20	5,589.0	2,440.0	88.7	67.3	591,777.01	473,624.47	-61.84	0.00
Bone Spring										
5,600.0	6.00	37.20	5,594.3	2,445.3	89.1	67.6	591,777.35	473,624.92	-62.15	0.00
5,644.9	6.00	37.20	5,639.0	2,490.0	92.8	70.5	591,780.19	473,628.66	-64.76	0.00
9 5/8" Intermediate Casing										
5,700.0	6.00	37.20	5,693.8	2,544.8	97.4	73.9	591,783.67	473,633.24	-67.95	0.00
5,800.0	6.00	37.20	5,793.2	2,644.2	105.7	80.3	591,789.99	473,641.57	-73.76	0.00



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5,900.0	6.00	37.20	5,892.7	2,743.7	114.1	86.6	591,796.31	473,649.89	-79.57	0.00
6,000.0	6.00	37.20	5,992.1	2,843.1	122.4	92.9	591,802.63	473,658.22	-85.38	0.00
6,100.0	6.00	37.20	6,091.6	2,942.6	130.7	99.2	591,808.95	473,666.55	-91.19	0.00
6,200.0	6.00	37.20	6,191.0	3,042.0	139.1	105.5	591,815.27	473,674.87	-96.99	0.00
6,300.0	6.00	37.20	6,290.5	3,141.5	147.4	111.9	591,821.59	473,683.20	-102.80	0.00
6,400.0	6.00	37.20	6,389.9	3,240.9	155.7	118.2	591,827.91	473,691.52	-108.61	0.00
6,500.0	6.00	37.20	6,489.4	3,340.4	164.0	124.5	591,834.23	473,699.85	-114.42	0.00
6,600.0	6.00	37.20	6,588.8	3,439.8	172.4	130.8	591,840.55	473,708.18	-120.22	0.00
6,682.5	6.00	37.20	6,651.0	3,502.0	177.6	134.8	591,844.49	473,713.38	-123.85	0.00
1st Bone Spring Sand										
6,700.0	6.00	37.20	6,688.3	3,539.3	180.7	137.1	591,848.88	473,716.50	-126.03	0.00
6,800.0	6.00	37.20	6,787.7	3,638.7	189.0	143.5	591,853.18	473,724.83	-131.84	0.00
6,900.0	6.00	37.20	6,887.2	3,738.2	197.3	149.8	591,859.50	473,733.15	-137.65	0.00
7,000.0	6.00	37.20	6,986.7	3,837.7	205.7	156.1	591,865.82	473,741.48	-143.45	0.00
7,100.0	6.00	37.20	7,086.1	3,937.1	214.0	162.4	591,872.14	473,749.81	-149.26	0.00
7,200.0	6.00	37.20	7,185.6	4,036.6	222.3	168.7	591,878.46	473,758.13	-155.07	0.00
7,240.7	6.00	37.20	7,226.0	4,077.0	225.7	171.3	591,881.03	473,761.52	-157.43	0.00
2nd Bone Spring Sand										
7,300.0	6.00	37.20	7,285.0	4,136.0	230.6	175.1	591,884.78	473,766.46	-160.88	0.00
7,400.0	6.00	37.20	7,384.5	4,235.5	239.0	181.4	591,891.10	473,774.78	-166.68	0.00
7,412.6	6.00	37.20	7,397.0	4,248.0	240.0	182.2	591,891.90	473,775.83	-167.42	0.00
2nd Bone Spring Lime										
7,500.0	6.00	37.20	7,483.9	4,334.9	247.3	187.7	591,897.42	473,783.11	-172.49	0.00
7,600.0	6.00	37.20	7,583.4	4,434.4	255.6	194.0	591,903.74	473,791.44	-178.30	0.00
7,700.0	6.00	37.20	7,682.8	4,533.8	263.9	200.3	591,910.06	473,799.76	-184.11	0.00
7,800.0	6.00	37.20	7,782.3	4,633.3	272.3	206.7	591,916.38	473,808.09	-189.92	0.00
7,900.0	6.00	37.20	7,881.7	4,732.7	280.6	213.0	591,922.70	473,816.41	-195.72	0.00



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8,000.0	6.00	37.20	7,981.2	4,832.2	288.9	219.3	591,929.02	473,824.74	-201.53	0.00
8,100.0	6.00	37.20	8,080.6	4,931.6	297.2	225.6	591,935.34	473,833.07	-207.34	0.00
8,200.0	6.00	37.20	8,180.1	5,031.1	305.6	231.9	591,941.66	473,841.39	-213.15	0.00
8,300.0	6.00	37.20	8,279.5	5,130.5	313.9	238.3	591,947.98	473,849.72	-218.95	0.00
8,400.0	6.00	37.20	8,379.0	5,230.0	322.2	244.6	591,954.30	473,858.04	-224.76	0.00
8,482.0	6.00	37.20	8,460.5	5,311.5	329.1	249.8	591,959.48	473,864.87	-229.52	0.00
Start Drop -2.33										
8,500.0	5.58	37.20	8,478.4	5,329.4	330.5	250.9	591,960.58	473,866.32	-230.53	2.33
8,600.0	3.25	37.20	8,578.1	5,429.1	336.6	255.5	591,965.23	473,872.45	-234.81	2.33
8,700.0	0.91	37.20	8,678.1	5,529.1	339.5	257.7	591,967.42	473,875.33	-236.82	2.33
8,711.9	0.63	37.20	8,690.0	5,541.0	339.6	257.8	591,967.52	473,875.46	-236.91	2.33
3rd Bone Spring Sand										
8,739.0	0.00	0.00	8,717.1	5,568.1	339.8	257.9	591,967.61	473,875.58	-236.99	2.33
Start Build 11.36										
8,800.0	6.93	269.50	8,777.9	5,628.9	339.7	254.2	591,963.83	473,875.55	-233.32	11.36
8,900.0	18.29	269.50	8,875.3	5,726.3	339.5	232.4	591,942.14	473,875.38	-211.58	11.36
9,000.0	29.65	269.50	8,966.6	5,817.6	339.2	191.9	591,901.58	473,875.00	-171.12	11.36
9,097.3	40.70	269.50	9,046.0	5,897.0	338.7	135.9	591,845.61	473,874.52	-115.28	11.36
Wolfcamp										
9,100.0	41.01	269.50	9,046.0	5,899.0	338.7	134.1	591,843.86	473,874.50	-113.53	11.36
9,200.0	52.36	269.50	9,116.5	5,967.5	338.0	61.5	591,771.22	473,873.87	-41.06	11.36
9,300.0	63.72	269.50	9,169.4	6,020.4	337.3	-23.2	591,686.52	473,873.13	43.44	11.36
9,400.0	75.08	269.50	9,204.5	6,055.5	336.5	-116.7	591,593.07	473,872.31	136.68	11.36
9,500.0	86.44	269.50	9,220.5	6,071.5	335.6	-215.2	591,494.53	473,871.45	234.88	11.36
9,539.0	90.87	269.50	9,221.4	6,072.4	335.3	-254.2	591,455.55	473,871.11	273.87	11.36
Start 4640.0 hold at 9539.0 MD										
9,600.0	90.87	269.50	9,220.5	6,071.5	334.8	-315.2	591,394.56	473,870.58	334.72	0.00
9,700.0	90.87	269.50	9,219.0	6,070.0	333.9	-415.1	591,294.58	473,869.71	434.47	0.00



Morcor Engineering
Morcor Standard Plan



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Design: 180907 Alisa Ogden 15 - 2H

Local Co-ordinate Reference: Well Alisa Ogden 15 - 2H
TVD Reference: WELL @ 3149.0usft (Original Well Elev)
MD Reference: WELL @ 3149.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)	DLog (°/100usft)
9,800.0	90.87	269.50	9,217.5	6,066.5	333.0	-515.1	591,194.59	473,868.83	534.22	0.00
9,900.0	90.87	269.50	9,215.9	6,066.9	332.1	-815.1	591,094.61	473,867.96	633.97	0.00
10,000.0	90.87	269.50	9,214.4	6,065.4	331.3	-715.1	590,994.62	473,867.09	733.72	0.00
10,100.0	90.87	269.50	9,212.9	6,063.9	330.4	-815.1	590,894.64	473,866.22	833.47	0.00
10,200.0	90.87	269.50	9,211.4	6,062.4	329.5	-915.1	590,794.65	473,865.34	933.23	0.00
10,300.0	90.87	269.50	9,209.9	6,060.9	328.7	-1,015.1	590,694.67	473,864.47	1,032.98	0.00
10,400.0	90.87	269.50	9,208.4	6,059.4	327.8	-1,115.0	590,594.68	473,863.60	1,132.73	0.00
10,500.0	90.87	269.50	9,206.8	6,057.8	326.9	-1,215.0	590,494.70	473,862.73	1,232.48	0.00
10,600.0	90.87	269.50	9,205.3	6,056.3	326.0	-1,315.0	590,394.72	473,861.85	1,332.23	0.00
10,700.0	90.87	269.50	9,203.8	6,054.8	325.2	-1,415.0	590,294.73	473,860.98	1,431.98	0.00
10,800.0	90.87	269.50	9,202.3	6,053.3	324.3	-1,515.0	590,194.75	473,860.11	1,531.73	0.00
10,900.0	90.87	269.50	9,200.8	6,051.8	323.4	-1,615.0	590,094.76	473,859.24	1,631.48	0.00
11,000.0	90.87	269.50	9,199.2	6,050.2	322.5	-1,714.9	589,994.78	473,858.36	1,731.24	0.00
11,100.0	90.87	269.50	9,197.7	6,048.7	321.7	-1,814.9	589,894.79	473,857.49	1,830.99	0.00
11,200.0	90.87	269.50	9,196.2	6,047.2	320.8	-1,914.9	589,794.81	473,856.62	1,930.74	0.00
11,300.0	90.87	269.50	9,194.7	6,045.7	319.9	-2,014.9	589,694.82	473,855.75	2,030.49	0.00
11,400.0	90.87	269.50	9,193.2	6,044.2	319.1	-2,114.9	589,594.84	473,854.87	2,130.24	0.00
11,500.0	90.87	269.50	9,191.6	6,042.6	318.2	-2,214.9	589,494.85	473,854.00	2,229.99	0.00
11,600.0	90.87	269.50	9,190.1	6,041.1	317.3	-2,314.9	589,394.87	473,853.13	2,329.74	0.00
11,700.0	90.87	269.50	9,188.6	6,039.6	316.4	-2,414.8	589,294.88	473,852.26	2,429.49	0.00
11,800.0	90.87	269.50	9,187.1	6,038.1	315.6	-2,514.8	589,194.90	473,851.38	2,529.25	0.00
11,900.0	90.87	269.50	9,185.6	6,036.6	314.7	-2,614.8	589,094.91	473,850.51	2,629.00	0.00
12,000.0	90.87	269.50	9,184.1	6,035.1	313.8	-2,714.8	588,994.93	473,849.64	2,728.75	0.00
12,100.0	90.87	269.50	9,182.5	6,033.5	312.9	-2,814.8	588,894.95	473,848.77	2,828.50	0.00
12,200.0	90.87	269.50	9,181.0	6,032.0	312.1	-2,914.8	588,794.96	473,847.89	2,928.25	0.00
12,300.0	90.87	269.50	9,179.5	6,030.5	311.2	-3,014.7	588,694.98	473,847.02	3,028.00	0.00
12,400.0	90.87	269.50	9,178.0	6,029.0	310.3	-3,114.7	588,594.99	473,846.15	3,127.75	0.00



Morcor Engineering
Morcor Standard Plan

MORCOR
ENGINEERING

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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)	DLog (°/100usft)
12,500.0	90.87	269.50	9,176.5	6,027.5	309.5	-3,214.7	588,495.01	473,845.27	3,227.50	0.00
12,600.0	90.87	269.50	9,174.9	6,025.9	308.6	-3,314.7	588,395.02	473,844.40	3,327.26	0.00
12,700.0	90.87	269.50	9,173.4	6,024.4	307.7	-3,414.7	588,295.04	473,843.53	3,427.01	0.00
12,800.0	90.87	269.50	9,171.9	6,022.9	306.8	-3,514.7	588,195.05	473,842.66	3,526.76	0.00
12,900.0	90.87	269.50	9,170.4	6,021.4	306.0	-3,614.7	588,095.07	473,841.78	3,626.51	0.00
13,000.0	90.87	269.50	9,168.9	6,019.9	305.1	-3,714.6	587,995.08	473,840.91	3,726.26	0.00
13,100.0	90.87	269.50	9,167.4	6,018.4	304.2	-3,814.6	587,895.10	473,840.04	3,826.01	0.00
13,200.0	90.87	269.50	9,165.8	6,016.8	303.3	-3,914.6	587,795.11	473,839.17	3,925.76	0.00
13,300.0	90.87	269.50	9,164.3	6,015.3	302.5	-4,014.6	587,695.13	473,838.29	4,025.51	0.00
13,400.0	90.87	269.50	9,162.8	6,013.8	301.6	-4,114.6	587,595.14	473,837.42	4,125.27	0.00
13,500.0	90.87	269.50	9,161.3	6,012.3	300.7	-4,214.6	587,495.16	473,836.55	4,225.02	0.00
13,600.0	90.87	269.50	9,159.8	6,010.8	299.9	-4,314.5	587,395.18	473,835.68	4,324.77	0.00
13,700.0	90.87	269.50	9,158.2	6,009.2	299.0	-4,414.5	587,295.19	473,834.80	4,424.52	0.00
13,800.0	90.87	269.50	9,156.7	6,007.7	298.1	-4,514.5	587,195.21	473,833.93	4,524.27	0.00
13,900.0	90.87	269.50	9,155.2	6,006.2	297.2	-4,614.5	587,095.22	473,833.06	4,624.02	0.00
14,000.0	90.87	269.50	9,153.7	6,004.7	296.4	-4,714.5	586,995.24	473,832.19	4,723.77	0.00
14,100.0	90.87	269.50	9,152.2	6,003.2	295.5	-4,814.5	586,895.25	473,831.31	4,823.52	0.00
14,179.0	90.87	269.50	9,151.0	6,002.0	294.8	-4,893.5	586,816.26	473,830.62	4,902.33	0.00

TD at 14179.0 - 5 1/2" Production Casing

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
120.0	120.0	20" Conductor	20	26
418.0	418.0	13 3/8" Surface Casing	13-3/8	17-1/2
5,644.9	5,639.0	9 5/8" Intermediate Casing	9-5/8	12-1/4
14,179.0	9,151.0	5 1/2" Production Casing	5-1/2	8-3/4



Morcor Engineering
Morcor Standard Plan

MORCOR
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Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,851.0	2,851.0	Cherry Canyon		0.00	
443.0	443.0	Salado		0.00	
7,240.7	7,226.0	2nd Bone Spring Sand		0.00	
9,097.3	9,046.0	Wolfcamp		0.00	
8,711.9	8,690.0	3rd Bone Spring Sand		0.00	
2,110.0	2,110.0	Delaware		0.00	
6,662.5	6,651.0	1st Bone Spring Sand		0.00	
1,217.0	1,217.0	Top of Salt		0.00	
4,025.0	4,025.0	Brushy Canyon		0.00	
5,594.6	5,589.0	Bone Spring		0.00	
1,919.0	1,919.0	Base of Salt		0.00	
7,412.6	7,397.0	2nd Bone Spring Lime		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,430.0	4,430.0	0.0	0.0	Start Build 3.00
4,630.0	4,629.6	8.3	6.3	Start 3852.0 hold at 4630.0 MD
8,462.0	8,460.5	329.1	249.8	Start Drop -2.33
8,739.0	8,717.1	339.8	257.9	Start Build 11.36
9,539.0	9,221.4	335.3	-254.2	Start 4840.0 hold at 9539.0 MD
14,179.0	9,151.0	294.8	-4,893.5	TD at 14179.0

Checked By: _____ Approved By: _____ Date: _____

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Azimuths to Grid North
 True North: -0.09°
 Magnetic North: 6.89°
 Magnetic Field
 Strength: 47880.9snT
 Dip Angle: 59.98°
 Date: 9/7/2018
 Model: IGRF2010

CASING DETAILS

TVD	MD	Name	Size
120.0	120.0	20" Conductor	20
418.0	418.0	13 3/8" Surface Casing	13-3/8
5639.0	5644.9	9 5/8" Intermediate Casing	9-5/8
9151.0	14179.0	5 1/2" Production Casing	5-1/2

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
443.0	443.0	Salado	0.00	
1217.0	1217.0	Top of Salt	0.00	
1919.0	1919.0	Base of Salt	0.00	
2110.0	2110.0	Delaware	0.00	
2851.0	2851.0	Cherry Canyon	0.00	
4025.0	4025.0	Brushy Canyon	0.00	
5589.0	5594.6	Bone Spring	0.00	
6651.0	6662.5	1st Bone Spring Sand	0.00	
7226.0	7240.7	2nd Bone Spring Sand	0.00	
7397.0	7412.6	2nd Bone Spring Lime	0.00	
8690.0	8711.9	3rd Bone Spring Sand	0.00	
9046.0	9097.3	Wolfcamp	0.00	

