



Caza Operating LLC

Lennox 34 State 2H

Lennox 34 State 2H

Lennox 34 State 2H

Lennox 34 State 2H

Plan: 181102 Lennox 34 State 2H

Morcor Standard Plan

02 November, 2018

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**MORCOR
ENGINEERING**



Morcor Engineering
Morcor Standard Plan

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ENGINEERING

Company: Caza Operating LLC
Project: Lennox 34 State 2H
Site: Lennox 34 State 2H
Well: Lennox 34 State 2H
Wellbore: Lennox 34 State 2H
Design: 181102 Lennox 34 State 2H

Local Co-ordinate Reference: Well Lennox 34 State 2H
TVD Reference: WELL @ 3545.0usft (Original Well Elev)
MD Reference: WELL @ 3545.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project Lennox 34 State 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 Lennox 34 State 2H

Site Position:	Northing:	489,378.53 usft	Latitude:	32° 20' 29.843 N
From: Lat/Long	Easting:	841,731.04 usft	Longitude:	103° 21' 38.452 W
Position Uncertainty: 1.0 usft	Slot Radius:	17-1/2 "	Grid Convergence:	0.52 °

Well Lennox 34 State 2H

Well Position	+N/-S	0.0 usft	Northing:	489,378.53 usft	Latitude:	32° 20' 29.843 N
	+E/-W	0.0 usft	Easting:	841,731.04 usft	Longitude:	103° 21' 38.452 W
Position Uncertainty		1.0 usft	Wellhead Elevation:	usft	Ground Level:	3,523.0 usft

Wellbore Lennox 34 State 2H

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/2/2018	6.58	60.14	47,968

Design 181102 Lennox 34 State 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	7.24

Survey Tool Program **Date** 11/2/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	14,634.0	181102 Lennox 34 State 2H (Lennox 34 S	MWD	MWD - Standard

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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)
0.0	0.00	0.00	0.0	-3,545.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
100.0	0.00	109.00	100.0	-3,445.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
120.0	0.00	109.00	120.0	-3,425.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
20" Conductor										
200.0	0.00	109.00	200.0	-3,345.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
300.0	0.00	109.00	300.0	-3,245.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
400.0	0.00	109.00	400.0	-3,145.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
500.0	0.00	109.00	500.0	-3,045.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
600.0	0.00	109.00	600.0	-2,945.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
700.0	0.00	109.00	700.0	-2,845.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
800.0	0.00	109.00	800.0	-2,745.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
900.0	0.00	109.00	900.0	-2,645.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
1,000.0	0.00	109.00	1,000.0	-2,545.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
1,100.0	0.00	109.00	1,100.0	-2,445.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
1,200.0	0.00	109.00	1,200.0	-2,345.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
1,300.0	0.00	109.00	1,300.0	-2,245.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
1,400.0	0.00	109.00	1,400.0	-2,145.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
1,500.0	0.00	109.00	1,500.0	-2,045.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
1,600.0	0.00	109.00	1,600.0	-1,945.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
1,700.0	0.00	109.00	1,700.0	-1,845.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
1,800.0	0.00	109.00	1,800.0	-1,745.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
1,900.0	0.00	109.00	1,900.0	-1,645.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
1,905.0	0.00	109.00	1,905.0	-1,640.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
Rustler										
1,930.0	0.00	109.00	1,930.0	-1,615.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
13 3/8" Surface Casing										
2,000.0	0.00	109.00	2,000.0	-1,545.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00
2,100.0	0.00	109.00	2,100.0	-1,445.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00

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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)	
2,200.0	0.00	109.00	2,200.0	-1,345.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00	
2,230.0	0.00	109.00	2,230.0	-1,315.0	0.0	0.0	841,731.04	489,378.53	0.00	0.00	
Start Build 3.00											
2,300.0	2.10	109.00	2,300.0	-1,245.0	-0.4	1.2	841,732.26	489,378.11	-0.26	3.00	
2,400.0	5.10	109.00	2,399.8	-1,145.2	-2.5	7.1	841,738.19	489,376.07	-1.54	3.00	
2,430.0	6.00	109.00	2,429.6	-1,115.4	-3.4	9.9	841,740.94	489,375.12	-2.13	3.00	
Start 6570.0 hold at 2430.0 MD											
2,435.4	6.00	109.00	2,435.0	-1,110.0	-3.6	10.4	841,741.47	489,374.94	-2.25	0.00	
Top of Salt											
2,500.0	6.00	109.00	2,499.3	-1,045.7	-5.8	16.8	841,747.85	489,372.74	-3.62	0.00	
2,600.0	6.00	109.00	2,598.7	-946.3	-9.2	26.7	841,757.74	489,369.34	-5.76	0.00	
2,700.0	6.00	109.00	2,698.2	-846.8	-12.6	36.6	841,767.62	489,365.94	-7.89	0.00	
2,800.0	6.00	109.00	2,797.6	-747.4	-16.0	46.5	841,777.50	489,362.53	-10.02	0.00	
2,900.0	6.00	109.00	2,897.1	-647.9	-19.4	56.3	841,787.39	489,359.13	-12.15	0.00	
3,000.0	6.00	109.00	2,996.5	-548.5	-22.8	66.2	841,797.27	489,355.73	-14.28	0.00	
3,100.0	6.00	109.00	3,096.0	-449.0	-26.2	76.1	841,807.15	489,352.32	-16.41	0.00	
3,200.0	6.00	109.00	3,195.4	-349.6	-29.6	86.0	841,817.04	489,348.92	-18.54	0.00	
3,300.0	6.00	109.00	3,294.9	-250.1	-33.0	95.9	841,826.92	489,345.52	-20.67	0.00	
3,400.0	6.00	109.00	3,394.3	-150.7	-36.4	105.8	841,836.80	489,342.11	-22.81	0.00	
3,500.0	6.00	109.00	3,493.8	-51.2	-39.8	115.6	841,846.69	489,338.71	-24.94	0.00	
3,600.0	6.00	109.00	3,593.2	48.2	-43.2	125.5	841,856.57	489,335.31	-27.07	0.00	
3,700.0	6.00	109.00	3,692.7	147.7	-46.6	135.4	841,866.45	489,331.91	-29.20	0.00	
3,800.0	6.00	109.00	3,792.1	247.1	-50.0	145.3	841,876.34	489,328.50	-31.33	0.00	
3,853.2	6.00	109.00	3,845.0	300.0	-51.8	150.5	841,881.59	489,326.69	-32.46	0.00	
Base of Salt											
3,900.0	6.00	109.00	3,891.6	346.6	-53.4	155.2	841,886.22	489,325.10	-33.46	0.00	
4,000.0	6.00	109.00	3,991.0	446.0	-56.8	165.1	841,896.10	489,321.70	-35.59	0.00	
4,100.0	6.00	109.00	4,090.5	545.5	-60.2	174.9	841,905.99	489,318.29	-37.72	0.00	



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4,200.0	6.00	109.00	4,189.9	644.9	-63.6	184.8	841,915.87	489,314.89	-39.85	0.00
4,300.0	6.00	109.00	4,289.4	744.4	-67.0	194.7	841,925.75	489,311.49	-41.99	0.00
4,400.0	6.00	109.00	4,388.8	843.8	-70.4	204.6	841,935.64	489,308.08	-44.12	0.00
4,500.0	6.00	109.00	4,488.3	943.3	-73.9	214.5	841,945.52	489,304.68	-46.25	0.00
4,567.1	6.00	109.00	4,555.0	1,010.0	-76.1	221.1	841,952.15	489,302.40	-47.68	0.00
Capitan										
4,600.0	6.00	109.00	4,587.7	1,042.7	-77.3	224.4	841,955.40	489,301.28	-48.38	0.00
4,700.0	6.00	109.00	4,687.2	1,142.2	-80.7	234.2	841,965.29	489,297.87	-50.51	0.00
4,800.0	6.00	109.00	4,786.7	1,241.7	-84.1	244.1	841,975.17	489,294.47	-52.64	0.00
4,900.0	6.00	109.00	4,886.1	1,341.1	-87.5	254.0	841,985.05	489,291.07	-54.77	0.00
5,000.0	6.00	109.00	4,985.6	1,440.6	-90.9	263.9	841,994.94	489,287.66	-56.90	0.00
5,100.0	6.00	109.00	5,085.0	1,540.0	-94.3	273.8	842,004.82	489,284.26	-59.03	0.00
5,200.0	6.00	109.00	5,184.5	1,639.5	-97.7	283.7	842,014.70	489,280.86	-61.17	0.00
5,300.0	6.00	109.00	5,283.9	1,738.9	-101.1	293.5	842,024.59	489,277.46	-63.30	0.00
5,400.0	6.00	109.00	5,383.4	1,838.4	-104.5	303.4	842,034.47	489,274.05	-65.43	0.00
5,500.0	6.00	109.00	5,482.8	1,937.8	-107.9	313.3	842,044.35	489,270.65	-67.56	0.00
5,600.0	6.00	109.00	5,582.3	2,037.3	-111.3	323.2	842,054.24	489,267.25	-69.69	0.00
5,700.0	6.00	109.00	5,681.7	2,136.7	-114.7	333.1	842,064.12	489,263.84	-71.82	0.00
5,800.0	6.00	109.00	5,781.2	2,236.2	-118.1	343.0	842,074.00	489,260.44	-73.95	0.00
5,900.0	6.00	109.00	5,880.6	2,335.6	-121.5	352.8	842,083.89	489,257.04	-76.08	0.00
5,909.4	6.00	109.00	5,890.0	2,345.0	-121.8	353.8	842,084.82	489,256.72	-76.28	0.00
9 5/8" Intermediate Casing										
5,934.6	6.00	109.00	5,915.0	2,370.0	-122.7	356.3	842,087.30	489,255.86	-76.82	0.00
Delaware										
6,000.0	6.00	109.00	5,980.1	2,435.1	-124.9	362.7	842,093.77	489,253.63	-78.22	0.00
6,085.4	6.00	109.00	6,065.0	2,520.0	-127.8	371.2	842,102.21	489,250.73	-80.03	0.00
Cherry Canyon										



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6,100.0	6.00	109.00	6,079.5	2,534.5	-128.3	372.6	842,103.65	489,250.23	-80.35	0.00
6,200.0	6.00	109.00	6,179.0	2,634.0	-131.7	382.5	842,113.54	489,246.83	-82.48	0.00
6,300.0	6.00	109.00	6,278.4	2,733.4	-135.1	392.4	842,123.42	489,243.42	-84.61	0.00
6,400.0	6.00	109.00	6,377.9	2,832.9	-138.5	402.3	842,133.30	489,240.02	-86.74	0.00
6,500.0	6.00	109.00	6,477.3	2,932.3	-141.9	412.1	842,143.19	489,236.62	-88.87	0.00
6,600.0	6.00	109.00	6,576.8	3,031.8	-145.3	422.0	842,153.07	489,233.21	-91.00	0.00
6,700.0	6.00	109.00	6,676.2	3,131.2	-148.7	431.9	842,162.95	489,229.81	-93.13	0.00
6,800.0	6.00	109.00	6,775.7	3,230.7	-152.1	441.8	842,172.84	489,226.41	-95.26	0.00
6,900.0	6.00	109.00	6,875.1	3,330.1	-155.5	451.7	842,182.72	489,223.01	-97.40	0.00
7,000.0	6.00	109.00	6,974.6	3,429.6	-158.9	461.6	842,192.60	489,219.60	-99.53	0.00
7,100.0	6.00	109.00	7,074.1	3,529.1	-162.3	471.4	842,202.49	489,216.20	-101.66	0.00
7,200.0	6.00	109.00	7,173.5	3,628.5	-165.7	481.3	842,212.37	489,212.80	-103.79	0.00
7,251.8	6.00	109.00	7,225.0	3,680.0	-167.5	486.4	842,217.49	489,211.03	-104.89	0.00
Brushy Canyon										
7,300.0	6.00	109.00	7,273.0	3,728.0	-169.1	491.2	842,222.25	489,209.39	-105.92	0.00
7,400.0	6.00	109.00	7,372.4	3,827.4	-172.5	501.1	842,232.14	489,205.99	-108.05	0.00
7,500.0	6.00	109.00	7,471.9	3,926.9	-175.9	511.0	842,242.02	489,202.59	-110.18	0.00
7,600.0	6.00	109.00	7,571.3	4,026.3	-179.3	520.9	842,251.91	489,199.18	-112.31	0.00
7,700.0	6.00	109.00	7,670.8	4,125.8	-182.8	530.7	842,261.79	489,195.78	-114.44	0.00
7,800.0	6.00	109.00	7,770.2	4,225.2	-186.2	540.6	842,271.67	489,192.38	-116.58	0.00
7,900.0	6.00	109.00	7,869.7	4,324.7	-189.6	550.5	842,281.56	489,188.97	-118.71	0.00
8,000.0	6.00	109.00	7,969.1	4,424.1	-193.0	560.4	842,291.44	489,185.57	-120.84	0.00
8,100.0	6.00	109.00	8,068.6	4,523.6	-196.4	570.3	842,301.32	489,182.17	-122.97	0.00
8,200.0	6.00	109.00	8,168.0	4,623.0	-199.8	580.2	842,311.21	489,178.76	-125.10	0.00
8,300.0	6.00	109.00	8,267.5	4,722.5	-203.2	590.0	842,321.09	489,175.36	-127.23	0.00
8,400.0	6.00	109.00	8,366.9	4,821.9	-206.6	599.9	842,330.97	489,171.96	-129.36	0.00



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8,498.6	6.00	109.00	8,465.0	4,920.0	-209.9	609.7	842,340.72	489,168.60	-131.46	0.00
Bone Spring										
8,500.0	6.00	109.00	8,466.4	4,921.4	-210.0	609.8	842,340.86	489,168.56	-131.49	0.00
8,600.0	6.00	109.00	8,565.8	5,020.8	-213.4	619.7	842,350.74	489,165.15	-133.62	0.00
8,700.0	6.00	109.00	8,665.3	5,120.3	-216.8	629.6	842,360.62	489,161.75	-135.76	0.00
8,800.0	6.00	109.00	8,764.7	5,219.7	-220.2	639.5	842,370.51	489,158.35	-137.89	0.00
8,900.0	6.00	109.00	8,864.2	5,319.2	-223.6	649.3	842,380.39	489,154.94	-140.02	0.00
9,000.0	6.00	109.00	8,963.6	5,418.6	-227.0	659.2	842,390.27	489,151.54	-142.15	0.00
Start Drop -6.00										
9,100.0	0.00	0.00	9,063.5	5,518.5	-228.7	664.2	842,395.22	489,149.84	-143.22	6.00
Start 65.0 hold at 9100.0 MD										
9,165.0	0.00	0.00	9,128.5	5,583.5	-228.7	664.2	842,395.22	489,149.84	-143.22	0.00
Start Build 11.07										
9,200.0	3.87	0.00	9,163.4	5,618.4	-227.5	664.2	842,395.22	489,151.02	-142.04	11.07
9,300.0	14.94	0.00	9,261.9	5,716.9	-211.2	664.2	842,395.22	489,167.34	-125.86	11.07
9,400.0	26.00	0.00	9,355.5	5,810.5	-176.3	664.2	842,395.22	489,202.26	-91.21	11.07
9,500.0	37.07	0.00	9,440.6	5,895.6	-124.1	664.2	842,395.22	489,254.48	-39.41	11.07
9,600.0	48.14	0.00	9,514.1	5,969.1	-56.5	664.2	842,395.22	489,322.07	27.64	11.07
9,700.0	59.20	0.00	9,573.2	6,028.2	24.0	664.2	842,395.22	489,402.50	107.44	11.07
9,783.5	68.44	0.00	9,610.0	6,065.0	98.8	664.2	842,395.22	489,477.31	181.65	11.07
1st Bone Spring										
9,800.0	70.27	0.00	9,615.8	6,070.8	114.3	664.2	842,395.22	489,492.79	197.01	11.07
9,900.0	81.33	0.00	9,640.3	6,095.3	211.1	664.2	842,395.22	489,589.59	293.03	11.07
9,988.0	91.07	0.00	9,646.2	6,101.2	298.8	664.2	842,395.22	489,677.29	380.03	11.07
Start Turn -0.02										
10,000.0	91.07	360.00	9,645.9	6,100.9	310.8	664.2	842,395.22	489,689.29	391.94	0.02
10,100.0	91.07	359.98	9,644.1	6,099.1	410.7	664.2	842,395.20	489,789.27	491.12	0.02
10,200.0	91.07	359.96	9,642.2	6,097.2	510.7	664.1	842,395.14	489,889.25	590.30	0.02



Morcor Engineering
Morcor Standard Plan

MORCOR
ENGINEERING

Company: Caza Operating LLC
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Well: Lennox 34 State 2H
Wellbore: Lennox 34 State 2H
Design: 181102 Lennox 34 State 2H

Local Co-ordinate Reference: Well Lennox 34 State 2H
TVD Reference: WELL @ 3545.0usft (Original Well Elev)
MD Reference: WELL @ 3545.0usft (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)	DLeg (°/100usft)
10,300.0	91.07	359.94	9,640.3	6,095.3	610.7	664.0	842,395.05	489,989.23	689.48	0.02
10,400.0	91.07	359.92	9,638.5	6,093.5	710.7	663.9	842,394.93	490,089.22	788.65	0.02
10,500.0	91.07	359.90	9,636.6	6,091.6	810.7	663.7	842,394.78	490,189.20	887.81	0.02
10,600.0	91.07	359.88	9,634.7	6,089.7	910.7	663.5	842,394.59	490,289.18	986.97	0.02
10,700.0	91.07	359.86	9,632.9	6,087.9	1,010.6	663.3	842,394.36	490,389.16	1,086.13	0.02
10,800.0	91.07	359.84	9,631.0	6,086.0	1,110.6	663.1	842,394.10	490,489.15	1,185.29	0.02
10,900.0	91.07	359.82	9,629.1	6,084.1	1,210.6	662.8	842,393.81	490,589.13	1,284.44	0.02
11,000.0	91.07	359.80	9,627.3	6,082.3	1,310.6	662.4	842,393.49	490,689.11	1,383.58	0.02
11,100.0	91.07	359.78	9,625.4	6,080.4	1,410.6	662.1	842,393.13	490,789.09	1,482.72	0.02
11,200.0	91.07	359.77	9,623.5	6,078.5	1,510.5	661.7	842,392.74	490,889.07	1,581.86	0.02
11,300.0	91.07	359.75	9,621.7	6,076.7	1,610.5	661.3	842,392.31	490,989.06	1,680.99	0.02
11,400.0	91.07	359.73	9,619.8	6,074.8	1,710.5	660.8	842,391.85	491,089.04	1,780.12	0.02
11,500.0	91.07	359.71	9,617.9	6,072.9	1,810.5	660.3	842,391.35	491,189.02	1,879.24	0.02
11,600.0	91.07	359.69	9,616.0	6,071.0	1,910.5	659.8	842,390.83	491,289.00	1,978.36	0.02
11,700.0	91.07	359.67	9,614.2	6,069.2	2,010.4	659.2	842,390.26	491,388.98	2,077.47	0.02
11,800.0	91.07	359.65	9,612.3	6,067.3	2,110.4	658.6	842,389.67	491,488.96	2,176.58	0.02
11,900.0	91.07	359.63	9,610.4	6,065.4	2,210.4	658.0	842,389.04	491,588.94	2,275.68	0.02
12,000.0	91.07	359.61	9,608.6	6,063.6	2,310.4	657.3	842,388.38	491,688.92	2,374.79	0.02
12,100.0	91.07	359.59	9,606.7	6,061.7	2,410.4	656.6	842,387.68	491,788.90	2,473.88	0.02
12,200.0	91.07	359.57	9,604.8	6,059.8	2,510.4	655.9	842,386.95	491,888.88	2,572.97	0.02
12,300.0	91.07	359.55	9,603.0	6,058.0	2,610.3	655.1	842,386.18	491,988.86	2,672.06	0.02
12,400.0	91.07	359.53	9,601.1	6,056.1	2,710.3	654.3	842,385.39	492,088.84	2,771.14	0.02
12,500.0	91.07	359.51	9,599.2	6,054.2	2,810.3	653.5	842,384.55	492,188.82	2,870.22	0.02
12,600.0	91.07	359.49	9,597.4	6,052.4	2,910.3	652.6	842,383.69	492,288.80	2,969.29	0.02
12,700.0	91.07	359.47	9,595.5	6,050.5	3,010.2	651.7	842,382.79	492,388.78	3,068.36	0.02
12,800.0	91.07	359.46	9,593.6	6,048.6	3,110.2	650.8	842,381.85	492,488.76	3,167.43	0.02
12,900.0	91.07	359.44	9,591.8	6,046.8	3,210.2	649.8	842,380.89	492,588.73	3,266.49	0.02



Morcor Engineering
Morcor Standard Plan

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ENGINEERING

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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)
13,000.0	91.07	359.42	9,589.9	6,044.9	3,310.2	648.8	842,379.88	492,688.71	3,365.54	0.02
13,100.0	91.07	359.40	9,588.0	6,043.0	3,410.2	647.8	842,378.85	492,788.69	3,464.59	0.02
13,200.0	91.07	359.38	9,586.2	6,041.2	3,510.1	646.7	842,377.78	492,888.66	3,563.64	0.02
13,300.0	91.07	359.36	9,584.3	6,039.3	3,610.1	645.6	842,376.68	492,988.64	3,662.68	0.02
13,400.0	91.07	359.34	9,582.4	6,037.4	3,710.1	644.5	842,375.54	493,088.62	3,761.72	0.02
13,500.0	91.07	359.32	9,580.6	6,035.6	3,810.1	643.3	842,374.37	493,188.59	3,860.75	0.02
13,600.0	91.07	359.30	9,578.7	6,033.7	3,910.0	642.1	842,373.17	493,288.57	3,959.78	0.02
13,700.0	91.07	359.28	9,576.8	6,031.8	4,010.0	640.9	842,371.93	493,388.54	4,058.80	0.02
13,800.0	91.07	359.26	9,575.0	6,030.0	4,110.0	639.6	842,370.66	493,488.52	4,157.82	0.02
13,900.0	91.07	359.24	9,573.1	6,028.1	4,210.0	638.3	842,369.35	493,588.49	4,256.83	0.02
14,000.0	91.07	359.22	9,571.2	6,026.2	4,309.9	637.0	842,368.01	493,688.47	4,355.84	0.02
14,100.0	91.07	359.20	9,569.4	6,024.4	4,409.9	635.6	842,366.64	493,788.44	4,454.84	0.02
14,200.0	91.07	359.18	9,567.5	6,022.5	4,509.9	634.2	842,365.23	493,888.41	4,553.84	0.02
14,300.0	91.07	359.16	9,565.6	6,020.6	4,609.9	632.7	842,363.79	493,988.38	4,652.84	0.02
14,400.0	91.07	359.15	9,563.8	6,018.8	4,709.8	631.3	842,362.32	494,088.36	4,751.83	0.02
14,500.0	91.07	359.13	9,561.9	6,016.9	4,809.8	629.8	842,360.81	494,188.33	4,850.81	0.02
14,600.0	91.07	359.11	9,560.0	6,015.0	4,909.8	628.2	842,359.27	494,288.30	4,949.79	0.02
14,634.0	91.07	359.10	9,559.4	6,014.4	4,943.8	627.7	842,358.74	494,322.29	4,983.44	0.02

TD at 14634.0 - 5 1/2" Production Casing

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
5,909.4	5,890.0	9 5/8" Intermediate Casing	9-5/8	12-1/4
120.0	120.0	20" Conductor	20	26
14,634.0	9,559.4	5 1/2" Production Casing	5-1/2	8-3/4
1,930.0	1,930.0	13 3/8" Surface Casing	13-3/8	17-1/2

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Database: EDM 5000.1 Single User Db

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
9,783.5	9,610.0	1st Bone Spring		0.00	
6,085.4	6,065.0	Cherry Canyon		0.00	
2,435.4	2,435.0	Top of Salt		0.00	
7,251.8	7,225.0	Brushy Canyon		0.00	
5,934.6	5,915.0	Delaware		0.00	
4,567.1	4,555.0	Capitan		0.00	
3,853.2	3,845.0	Base of Salt		0.00	
1,905.0	1,905.0	Rustler		0.00	
8,498.6	8,465.0	Bone Spring		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,230.0	2,230.0	0.0	0.0	Start Build 3.00
2,430.0	2,429.6	-3.4	9.9	Start 6570.0 hold at 2430.0 MD
9,000.0	8,963.6	-227.0	659.2	Start Drop -6.00
9,100.0	9,063.5	-228.7	664.2	Start 65.0 hold at 9100.0 MD
9,165.0	9,128.5	-228.7	664.2	Start Build 11.07
9,988.0	9,646.2	298.8	664.2	Start Turn -0.02
14,634.0	9,559.4	4,943.8	627.7	TD at 14634.0

Checked By: _____ Approved By: _____ Date: _____

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Azimuths to Grid North
 True North: -0.52°
 Magnetic North: 6.06°

Magnetic Field
 Strength: 47968.2snT
 Dip Angle: 60.14°
 Date: 11/2/2018
 Model: IGRF2010

CASING DETAILS

TVD	MD	Name	Size
120.0	120.0	20" Conductor	20
1930.0	1930.0	13 3/8" Surface Casing	13-3/8
5890.0	5909.4	9 5/8" Intermediate Casing	9-5/8
9559.4	14634.0	5 1/2" Production Casing	5-1/2

FORMATION TOP DETAILS

Formation	DipAngle	DipDir
Rustler	0.00	
Top of Salt	0.00	
Base of Salt	0.00	
Capitan	0.00	
Delaware	0.00	
Cherry Canyon	0.00	
Brushy Canyon	0.00	
Bone Spring	0.00	
1st Bone Spring	0.00	

