



**Caza
Petroleum**

Caza Operating LLC

Lennox 32 State 1H

Lennox 32 State 1H

Lennox 32 State 1H

Lennox 32 State 1H

Plan: 181024 Lennox 32 State 1H

Morcor Standard Plan

24 October, 2018

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**MORCOR
ENGINEERING**

30-025-45289



Morcor Engineering
Morcor Standard Plan

MORCOR
ENGINEERING

Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Lennox 32 State 1H
Project:	Lennox 32 State 1H	TVD Reference:	WELL @ 3545.0usft (Original Well Elev)
Site:	Lennox 32 State 1H	MD Reference:	WELL @ 3545.0usft (Original Well Elev)
Well:	Lennox 32 State 1H	North Reference:	Grid
Wellbore:	Lennox 32 State 1H	Survey Calculation Method:	Minimum Curvature
Design:	181024 Lennox 32 State 1H	Database:	EDM 5000.1 Single User Db

Project	Lennox 32 State 1H		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Lennox 32 State 1H		
Site Position:		Northing:	489,378.26 usft
From:	Lat/Long	Easting:	841,701.07 usft
Position Uncertainty:	1.0 usft	Slot Radius:	17-1/2 "
		Latitude:	32° 20' 29.843 N
		Longitude:	103° 21' 38.801 W
		Grid Convergence:	0.52 °

Well	Lennox 32 State 1H		
Well Position	+N/-S	0.0 usft	Northing: 489,378.26 usft
	+E/-W	0.0 usft	Easting: 841,701.07 usft
Position Uncertainty	1.0 usft		Latitude: 32° 20' 29.843 N
		Wellhead Elevation:	usft
			Longitude: 103° 21' 38.801 W
			Ground Level: 3,523.0 usft

Wellbore	Lennox 32 State 1H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/24/2018	6.58	60.14	47,971

Design	181024 Lennox 32 State 1H			
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	352.30

Survey Tool Program	Date 10/24/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	14,681.0	181024 Lennox 32 State 1H (Lennox 32 S	MWD	MWD - Standard

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Well:	Lennox 32 State 1H	North Reference:	Grid
Wellbore:	Lennox 32 State 1H	Survey Calculation Method:	Minimum Curvature
Design:	181024 Lennox 32 State 1H	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)
0.0	0.00	0.00	0.0	-3,545.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
100.0	0.00	249.50	100.0	-3,445.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
120.0	0.00	249.50	120.0	-3,425.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
20" Conductor										
200.0	0.00	249.50	200.0	-3,345.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
300.0	0.00	249.50	300.0	-3,245.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
400.0	0.00	249.50	400.0	-3,145.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
500.0	0.00	249.50	500.0	-3,045.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
600.0	0.00	249.50	600.0	-2,945.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
700.0	0.00	249.50	700.0	-2,845.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
800.0	0.00	249.50	800.0	-2,745.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
900.0	0.00	249.50	900.0	-2,645.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
1,000.0	0.00	249.50	1,000.0	-2,545.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
1,100.0	0.00	249.50	1,100.0	-2,445.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
1,200.0	0.00	249.50	1,200.0	-2,345.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
1,300.0	0.00	249.50	1,300.0	-2,245.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
1,400.0	0.00	249.50	1,400.0	-2,145.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
1,500.0	0.00	249.50	1,500.0	-2,045.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
1,600.0	0.00	249.50	1,600.0	-1,945.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
1,700.0	0.00	249.50	1,700.0	-1,845.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
1,800.0	0.00	249.50	1,800.0	-1,745.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
1,900.0	0.00	249.50	1,900.0	-1,645.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
1,905.0	0.00	249.50	1,905.0	-1,640.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
Rustler										
2,000.0	0.00	249.50	2,000.0	-1,545.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
2,045.0	0.00	249.50	2,045.0	-1,500.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
13 3/8" Surface Casing										
2,100.0	0.00	249.50	2,100.0	-1,445.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00

Company: Caza Operating LLC
Project: Lennox 32 State 1H
Site: Lennox 32 State 1H
Well: Lennox 32 State 1H
Wellbore: Lennox 32 State 1H
Design: 181024 Lennox 32 State 1H

Local Co-ordinate Reference: Well Lennox 32 State 1H
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)
2,200.0	0.00	249.50	2,200.0	-1,345.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
2,300.0	0.00	249.50	2,300.0	-1,245.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
2,400.0	0.00	249.50	2,400.0	-1,145.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
2,435.0	0.00	249.50	2,435.0	-1,110.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
Top of Salt										
2,500.0	0.00	249.50	2,500.0	-1,045.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
2,600.0	0.00	249.50	2,600.0	-945.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
2,700.0	0.00	249.50	2,700.0	-845.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
2,800.0	0.00	249.50	2,800.0	-745.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
2,900.0	0.00	249.50	2,900.0	-645.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
2,925.0	0.00	249.50	2,925.0	-620.0	0.0	0.0	841,701.07	489,378.26	0.00	0.00
Start Build 3.22										
3,000.0	2.41	249.50	3,000.0	-545.0	-0.6	-1.5	841,699.59	489,377.71	-0.35	3.22
3,100.0	5.63	249.50	3,099.7	-445.3	-3.0	-8.1	841,693.01	489,375.25	-1.90	3.22
3,125.0	6.44	249.50	3,124.6	-420.4	-3.9	-10.5	841,690.55	489,374.33	-2.49	3.22
Start 5800.0 hold at 3125.0 MD										
3,200.0	6.44	249.50	3,199.1	-345.9	-6.9	-18.4	841,682.67	489,371.38	-4.35	0.00
3,300.0	6.44	249.50	3,298.5	-246.5	-10.8	-28.9	841,672.16	489,367.45	-6.84	0.00
3,400.0	6.44	249.50	3,397.8	-147.2	-14.7	-39.4	841,661.66	489,363.52	-9.32	0.00
3,500.0	6.44	249.50	3,497.2	-47.8	-18.7	-49.9	841,651.15	489,359.60	-11.81	0.00
3,600.0	6.44	249.50	3,596.6	51.6	-22.6	-60.4	841,640.65	489,355.67	-14.29	0.00
3,700.0	6.44	249.50	3,696.0	151.0	-26.5	-70.9	841,630.14	489,351.74	-16.77	0.00
3,800.0	6.44	249.50	3,795.3	250.3	-30.4	-81.4	841,619.63	489,347.81	-19.26	0.00
3,850.0	6.44	249.50	3,845.0	300.0	-32.4	-86.7	841,614.38	489,345.85	-20.50	0.00
Base of Salt										
3,900.0	6.44	249.50	3,894.7	349.7	-34.4	-91.9	841,609.13	489,343.88	-21.74	0.00
4,000.0	6.44	249.50	3,994.1	449.1	-38.3	-102.4	841,598.62	489,339.96	-24.23	0.00
4,100.0	6.44	249.50	4,093.4	548.4	-42.2	-113.0	841,588.12	489,336.03	-26.71	0.00

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Well:	Lennox 32 State 1H	North Reference:	Grid
Wellbore:	Lennox 32 State 1H	Survey Calculation Method:	Minimum Curvature
Design:	181024 Lennox 32 State 1H	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)	
4,200.0	6.44	249.50	4,192.8	647.8	-46.2	-123.5	841,577.61	489,332.10	-29.20	0.00	
4,300.0	6.44	249.50	4,292.2	747.2	-50.1	-134.0	841,567.10	489,328.17	-31.68	0.00	
4,400.0	6.44	249.50	4,391.5	846.5	-54.0	-144.5	841,556.60	489,324.24	-34.17	0.00	
4,500.0	6.44	249.50	4,490.9	945.9	-57.9	-155.0	841,546.09	489,320.32	-36.65	0.00	
4,564.5	6.44	249.50	4,555.0	1,010.0	-60.5	-161.8	841,539.32	489,317.78	-38.26	0.00	
Capitan											
4,600.0	6.44	249.50	4,590.3	1,045.3	-61.9	-165.5	841,535.59	489,316.39	-39.14	0.00	
4,700.0	6.44	249.50	4,689.6	1,144.6	-65.8	-176.0	841,525.08	489,312.46	-41.62	0.00	
4,800.0	6.44	249.50	4,789.0	1,244.0	-69.7	-186.5	841,514.58	489,308.53	-44.11	0.00	
4,900.0	6.44	249.50	4,888.4	1,343.4	-73.7	-197.0	841,504.07	489,304.60	-46.59	0.00	
5,000.0	6.44	249.50	4,987.7	1,442.7	-77.6	-207.5	841,493.56	489,300.68	-49.08	0.00	
5,100.0	6.44	249.50	5,087.1	1,542.1	-81.5	-218.0	841,483.06	489,296.75	-51.56	0.00	
5,200.0	6.44	249.50	5,186.5	1,641.5	-85.4	-228.5	841,472.55	489,292.82	-54.05	0.00	
5,300.0	6.44	249.50	5,285.9	1,740.9	-89.4	-239.0	841,462.05	489,288.89	-56.53	0.00	
5,400.0	6.44	249.50	5,385.2	1,840.2	-93.3	-249.5	841,451.54	489,284.96	-59.02	0.00	
5,500.0	6.44	249.50	5,484.6	1,939.6	-97.2	-260.0	841,441.03	489,281.04	-61.50	0.00	
5,600.0	6.44	249.50	5,584.0	2,039.0	-101.2	-270.5	841,430.53	489,277.11	-63.99	0.00	
5,700.0	6.44	249.50	5,683.3	2,138.3	-105.1	-281.0	841,420.02	489,273.18	-66.47	0.00	
5,800.0	6.44	249.50	5,782.7	2,237.7	-109.0	-291.6	841,409.52	489,269.25	-68.96	0.00	
5,900.0	6.44	249.50	5,882.1	2,337.1	-112.9	-302.1	841,399.01	489,265.32	-71.44	0.00	
5,908.0	6.44	249.50	5,890.0	2,345.0	-113.2	-302.9	841,398.17	489,265.01	-71.64	0.00	
9 5/8" Intermediate Casing											
5,933.1	6.44	249.50	5,915.0	2,370.0	-114.2	-305.5	841,395.53	489,264.02	-72.26	0.00	
Delaware											
6,000.0	6.44	249.50	5,981.4	2,436.4	-116.9	-312.6	841,388.50	489,261.40	-73.92	0.00	
6,084.1	6.44	249.50	6,065.0	2,520.0	-120.2	-321.4	841,379.67	489,258.09	-76.01	0.00	
Cherry Canyon											

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Planned Survey											
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6,100.0	6.44	249.50	6,080.8	2,535.8	-120.8	-323.1	841,378.00	489,257.47	-76.41	0.00	
6,200.0	6.44	249.50	6,180.2	2,635.2	-124.7	-333.6	841,367.49	489,253.54	-78.89	0.00	
6,300.0	6.44	249.50	6,279.5	2,734.5	-128.6	-344.1	841,356.99	489,249.61	-81.38	0.00	
6,400.0	6.44	249.50	6,378.9	2,833.9	-132.6	-354.6	841,346.48	489,245.68	-83.86	0.00	
6,500.0	6.44	249.50	6,478.3	2,933.3	-136.5	-365.1	841,335.97	489,241.76	-86.35	0.00	
6,600.0	6.44	249.50	6,577.7	3,032.7	-140.4	-375.6	841,325.47	489,237.83	-88.83	0.00	
6,700.0	6.44	249.50	6,677.0	3,132.0	-144.4	-386.1	841,314.96	489,233.90	-91.32	0.00	
6,800.0	6.44	249.50	6,776.4	3,231.4	-148.3	-396.6	841,304.46	489,229.97	-93.80	0.00	
6,900.0	6.44	249.50	6,875.8	3,330.8	-152.2	-407.1	841,293.95	489,226.04	-96.29	0.00	
7,000.0	6.44	249.50	6,975.1	3,430.1	-156.1	-417.6	841,283.44	489,222.12	-98.77	0.00	
7,100.0	6.44	249.50	7,074.5	3,529.5	-160.1	-428.1	841,272.94	489,218.19	-101.26	0.00	
7,200.0	6.44	249.50	7,173.9	3,628.9	-164.0	-438.6	841,262.43	489,214.26	-103.74	0.00	
7,251.5	6.44	249.50	7,225.0	3,680.0	-166.0	-444.0	841,257.03	489,212.24	-105.02	0.00	
Brushy Canyon											
7,300.0	6.44	249.50	7,273.2	3,728.2	-167.9	-449.1	841,251.93	489,210.33	-106.23	0.00	
7,400.0	6.44	249.50	7,372.6	3,827.6	-171.9	-459.6	841,241.42	489,206.40	-108.71	0.00	
7,500.0	6.44	249.50	7,472.0	3,927.0	-175.8	-470.2	841,230.91	489,202.48	-111.20	0.00	
7,600.0	6.44	249.50	7,571.3	4,026.3	-179.7	-480.7	841,220.41	489,198.55	-113.68	0.00	
7,700.0	6.44	249.50	7,670.7	4,125.7	-183.6	-491.2	841,209.90	489,194.62	-116.17	0.00	
7,800.0	6.44	249.50	7,770.1	4,225.1	-187.6	-501.7	841,199.40	489,190.69	-118.65	0.00	
7,900.0	6.44	249.50	7,869.4	4,324.4	-191.5	-512.2	841,188.89	489,186.76	-121.14	0.00	
8,000.0	6.44	249.50	7,968.8	4,423.8	-195.4	-522.7	841,178.38	489,182.84	-123.62	0.00	
8,100.0	6.44	249.50	8,068.2	4,523.2	-199.4	-533.2	841,167.88	489,178.91	-126.11	0.00	
8,200.0	6.44	249.50	8,167.6	4,622.6	-203.3	-543.7	841,157.37	489,174.98	-128.59	0.00	
8,300.0	6.44	249.50	8,266.9	4,721.9	-207.2	-554.2	841,146.87	489,171.05	-131.07	0.00	
8,400.0	6.44	249.50	8,366.3	4,821.3	-211.1	-564.7	841,136.36	489,167.12	-133.56	0.00	

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8,499.3	6.44	249.50	8,465.0	4,920.0	-215.0	-575.1	841,125.92	489,163.22	-136.03	0.00	
Bone Spring											
8,500.0	6.44	249.50	8,465.7	4,920.7	-215.1	-575.2	841,125.85	489,163.20	-136.04	0.00	
8,600.0	6.44	249.50	8,565.0	5,020.0	-219.0	-585.7	841,115.35	489,159.27	-138.53	0.00	
8,700.0	6.44	249.50	8,664.4	5,119.4	-222.9	-596.2	841,104.84	489,155.34	-141.01	0.00	
8,800.0	6.44	249.50	8,763.8	5,218.8	-226.8	-606.7	841,094.34	489,151.41	-143.50	0.00	
8,900.0	6.44	249.50	8,863.1	5,318.1	-230.8	-617.2	841,083.83	489,147.48	-145.98	0.00	
8,925.0	6.44	249.50	8,888.0	5,343.0	-231.8	-619.9	841,081.20	489,146.50	-146.60	0.00	
Start Drop -3.22											
9,000.0	4.02	249.50	8,962.7	5,417.7	-234.2	-626.3	841,074.80	489,144.11	-148.12	3.22	
9,100.0	0.80	249.50	9,062.6	5,517.6	-235.6	-630.2	841,070.85	489,142.63	-149.05	3.22	
9,125.0	0.00	0.00	9,087.6	5,542.6	-235.7	-630.4	841,070.69	489,142.57	-149.09	3.22	
Start 100.0 hold at 9125.0 MD											
9,200.0	0.00	0.00	9,162.6	5,617.6	-235.7	-630.4	841,070.69	489,142.57	-149.09	0.00	
9,225.0	0.00	0.00	9,187.6	5,642.6	-235.7	-630.4	841,070.69	489,142.57	-149.09	0.00	
Start Build 11.24											
9,300.0	8.43	359.60	9,262.3	5,717.3	-230.2	-630.4	841,070.65	489,148.08	-143.63	11.24	
9,400.0	19.68	359.60	9,359.1	5,814.1	-205.9	-630.6	841,070.48	489,172.32	-119.58	11.24	
9,500.0	30.92	359.60	9,449.4	5,904.4	-163.3	-630.9	841,070.18	489,214.98	-77.26	11.24	
9,600.0	42.16	359.60	9,529.6	5,984.6	-103.8	-631.3	841,069.77	489,274.43	-18.30	11.24	
9,700.0	53.41	359.60	9,596.7	6,051.7	-29.9	-631.8	841,069.25	489,348.37	55.04	11.24	
9,723.0	55.99	359.60	9,610.0	6,065.0	-11.1	-631.9	841,069.12	489,367.14	73.66	11.24	
1st Bone Spring Sand											
9,800.0	64.65	359.60	9,648.1	6,103.1	55.7	-632.4	841,068.65	489,433.97	139.95	11.24	
9,900.0	75.89	359.60	9,681.8	6,136.8	149.7	-633.1	841,068.00	489,527.94	233.17	11.24	
10,000.0	87.13	359.60	9,696.5	6,151.5	248.4	-633.8	841,067.31	489,626.69	331.11	11.24	
10,035.0	91.07	359.60	9,697.1	6,152.1	283.4	-634.0	841,067.06	489,661.68	365.82	11.24	
Start Turn 0.00											



Morcor Engineering
Morcor Standard Plan

MORCOR
ENGINEERING

Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Lennox 32 State 1H
Project:	Lennox 32 State 1H	TVD Reference:	WELL @ 3545.0usft (Original Well Elev)
Site:	Lennox 32 State 1H	MD Reference:	WELL @ 3545.0usft (Original Well Elev)
Well:	Lennox 32 State 1H	North Reference:	Grid
Wellbore:	Lennox 32 State 1H	Survey Calculation Method:	Minimum Curvature
Design:	181024 Lennox 32 State 1H	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)	
10,100.0	91.07	359.60	9,695.9	6,150.9	348.4	-634.5	841,066.61	489,726.66	430.28	0.00	
10,200.0	91.07	359.60	9,694.0	6,149.0	448.4	-635.2	841,065.91	489,826.64	529.45	0.00	
10,300.0	91.07	359.60	9,692.1	6,147.1	548.4	-635.9	841,065.21	489,926.62	628.62	0.00	
10,400.0	91.07	359.60	9,690.3	6,145.3	648.3	-636.6	841,064.52	490,026.60	727.80	0.00	
10,500.0	91.07	359.60	9,688.4	6,143.4	748.3	-637.2	841,063.82	490,126.58	826.97	0.00	
10,600.0	91.07	359.60	9,686.5	6,141.5	848.3	-637.9	841,063.12	490,226.56	926.14	0.00	
10,700.0	91.07	359.60	9,684.7	6,139.7	948.3	-638.6	841,062.42	490,326.54	1,025.31	0.00	
10,800.0	91.07	359.60	9,682.8	6,137.8	1,048.3	-639.3	841,061.72	490,426.52	1,124.48	0.00	
10,900.0	91.07	359.60	9,680.9	6,135.9	1,148.2	-640.0	841,061.03	490,526.50	1,223.66	0.00	
11,000.0	91.07	359.60	9,679.1	6,134.1	1,248.2	-640.7	841,060.33	490,626.48	1,322.83	0.00	
11,100.0	91.07	359.60	9,677.2	6,132.2	1,348.2	-641.4	841,059.63	490,726.46	1,422.00	0.00	
11,200.0	91.07	359.60	9,675.3	6,130.3	1,448.2	-642.1	841,058.93	490,826.44	1,521.17	0.00	
11,300.0	91.07	359.60	9,673.5	6,128.5	1,548.2	-642.8	841,058.23	490,926.42	1,620.34	0.00	
11,400.0	91.07	359.60	9,671.6	6,126.6	1,648.1	-643.5	841,057.54	491,026.40	1,719.52	0.00	
11,500.0	91.07	359.60	9,669.7	6,124.7	1,748.1	-644.2	841,056.84	491,126.39	1,818.69	0.00	
11,600.0	91.07	359.60	9,667.8	6,122.8	1,848.1	-644.9	841,056.14	491,226.37	1,917.86	0.00	
11,700.0	91.07	359.60	9,666.0	6,121.0	1,948.1	-645.6	841,055.44	491,326.35	2,017.03	0.00	
11,800.0	91.07	359.60	9,664.1	6,119.1	2,048.1	-646.3	841,054.74	491,426.33	2,116.20	0.00	
11,900.0	91.07	359.60	9,662.2	6,117.2	2,148.0	-647.0	841,054.05	491,526.31	2,215.38	0.00	
12,000.0	91.07	359.60	9,660.4	6,115.4	2,248.0	-647.7	841,053.35	491,626.29	2,314.55	0.00	
12,100.0	91.07	359.60	9,658.5	6,113.5	2,348.0	-648.4	841,052.65	491,726.27	2,413.72	0.00	
12,200.0	91.07	359.60	9,656.6	6,111.6	2,448.0	-649.1	841,051.95	491,826.25	2,512.89	0.00	
12,300.0	91.07	359.60	9,654.8	6,109.8	2,548.0	-649.8	841,051.25	491,926.23	2,612.06	0.00	
12,400.0	91.07	359.60	9,652.9	6,107.9	2,647.9	-650.5	841,050.55	492,026.21	2,711.24	0.00	
12,500.0	91.07	359.60	9,651.0	6,106.0	2,747.9	-651.2	841,049.86	492,126.19	2,810.41	0.00	
12,600.0	91.07	359.60	9,649.2	6,104.2	2,847.9	-651.9	841,049.16	492,226.17	2,909.58	0.00	
12,700.0	91.07	359.60	9,647.3	6,102.3	2,947.9	-652.6	841,048.46	492,326.15	3,008.75	0.00	

Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Lennox 32 State 1H
Project:	Lennox 32 State 1H	TVD Reference:	WELL @ 3545.0usft (Original Well Elev)
Site:	Lennox 32 State 1H	MD Reference:	WELL @ 3545.0usft (Original Well Elev)
Well:	Lennox 32 State 1H	North Reference:	Grid
Wellbore:	Lennox 32 State 1H	Survey Calculation Method:	Minimum Curvature
Design:	181024 Lennox 32 State 1H	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)
12,800.0	91.07	359.60	9,645.4	6,100.4	3,047.9	-653.3	841,047.76	492,426.13	3,107.92	0.00
12,900.0	91.07	359.60	9,643.6	6,098.6	3,147.8	-654.0	841,047.06	492,526.11	3,207.10	0.00
13,000.0	91.07	359.60	9,641.7	6,096.7	3,247.8	-654.7	841,046.37	492,626.09	3,306.27	0.00
13,100.0	91.07	359.60	9,639.8	6,094.8	3,347.8	-655.4	841,045.67	492,726.07	3,405.44	0.00
13,200.0	91.07	359.60	9,638.0	6,093.0	3,447.8	-656.1	841,044.97	492,826.05	3,504.61	0.00
13,300.0	91.07	359.60	9,636.1	6,091.1	3,547.8	-656.8	841,044.27	492,926.03	3,603.78	0.00
13,400.0	91.07	359.60	9,634.2	6,089.2	3,647.7	-657.5	841,043.57	493,026.01	3,702.96	0.00
13,500.0	91.07	359.60	9,632.4	6,087.4	3,747.7	-658.2	841,042.88	493,125.99	3,802.13	0.00
13,600.0	91.07	359.60	9,630.5	6,085.5	3,847.7	-658.9	841,042.18	493,225.97	3,901.30	0.00
13,700.0	91.07	359.60	9,628.6	6,083.6	3,947.7	-659.6	841,041.48	493,325.95	4,000.47	0.00
13,800.0	91.07	359.60	9,626.8	6,081.8	4,047.7	-660.3	841,040.78	493,425.93	4,099.64	0.00
13,900.0	91.07	359.60	9,624.9	6,079.9	4,147.6	-661.0	841,040.08	493,525.91	4,198.81	0.00
14,000.0	91.07	359.60	9,623.0	6,078.0	4,247.6	-661.7	841,039.39	493,625.89	4,297.99	0.00
14,100.0	91.07	359.60	9,621.2	6,076.2	4,347.6	-662.4	841,038.69	493,725.87	4,397.16	0.00
14,200.0	91.07	359.60	9,619.3	6,074.3	4,447.6	-663.1	841,037.99	493,825.85	4,496.33	0.00
14,300.0	91.07	359.60	9,617.4	6,072.4	4,547.6	-663.8	841,037.29	493,925.83	4,595.50	0.00
14,400.0	91.07	359.60	9,615.6	6,070.6	4,647.6	-664.5	841,036.59	494,025.81	4,694.67	0.00
14,500.0	91.07	359.60	9,613.7	6,068.7	4,747.5	-665.2	841,035.90	494,125.79	4,793.85	0.00
14,600.0	91.07	359.60	9,611.8	6,066.8	4,847.5	-665.9	841,035.20	494,225.77	4,893.02	0.00
14,681.0	91.07	359.60	9,610.3	6,065.3	4,928.5	-666.4	841,034.63	494,306.75	4,973.35	0.00
TD at 14681.0 - 5 1/2" Production Casing										

Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Lennox 32 State 1H
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Site:	Lennox 32 State 1H	MD Reference:	WELL @ 3545.0usft (Original Well Elev)
Well:	Lennox 32 State 1H	North Reference:	Grid
Wellbore:	Lennox 32 State 1H	Survey Calculation Method:	Minimum Curvature
Design:	181024 Lennox 32 State 1H	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" Conductor	20	26	
2,045.0	2,045.0	13 3/8" Surface Casing	13-3/8	17-1/2	
14,681.0	9,610.3	5 1/2" Production Casing	5-1/2	8-3/4	
5,908.0	5,890.0	9 5/8" Intermediate Casing	9-5/8	12-1/4	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,435.0	2,435.0	Top of Salt		0.00	
5,933.1	5,915.0	Delaware		0.00	
3,850.0	3,845.0	Base of Salt		0.00	
6,084.1	6,065.0	Cherry Canyon		0.00	
7,251.5	7,225.0	Brushy Canyon		0.00	
9,723.0	9,610.0	1st Bone Spring Sand		0.00	
8,499.3	8,465.0	Bone Spring		0.00	
4,564.5	4,555.0	Capitan		0.00	
1,905.0	1,905.0	Rustler		0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
2,925.0	2,925.0	0.0	0.0	Start Build 3.22	
3,125.0	3,124.6	-3.9	-10.5	Start 5800.0 hold at 3125.0 MD	
8,925.0	8,888.0	-231.8	-619.9	Start Drop -3.22	
9,125.0	9,087.6	-235.7	-630.4	Start 100.0 hold at 9125.0 MD	
9,225.0	9,187.6	-235.7	-630.4	Start Build 11.24	
10,035.0	9,697.1	283.4	-634.0	Start Turn 0.00	
14,681.0	9,610.3	4,928.5	-666.4	TD at 14681.0	



Morcor Engineering
Morcor Standard Plan

MORCOR
ENGINEERING

Company: Caza Operating LLC
Project: Lennox 32 State 1H
Site: Lennox 32 State 1H
Well: Lennox 32 State 1H
Wellbore: Lennox 32 State 1H
Design: 181024 Lennox 32 State 1H

Local Co-ordinate Reference: Well Lennox 32 State 1H
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

Checked By: _____ Approved By: _____ Date: _____

Project: Lennox 32 State 1H
 Site: Lennox 32 State 1H
 Well: Lennox 32 State 1H
 Wellbore: Lennox 32 State 1H
 Design: 181024 Lennox 32 State 1H



**Caza
Petroleum**

OCT 24 2018



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

Magnetic Field
 Strength: 47970.7snT
 Dip Angle: 60.14°
 Date: 10/24/2018
 Model: IGRF2010

CASING DETAILS

TVD	MD	Name	Size
120.0	120.0	20" Conductor	20
2045.0	2045.0	13 3/8" Surface Casing	13-3/8
5890.0	5908.0	9 5/8" Intermediate Casing	9-5/8
9610.3	14681.0	5 1/2" Production Casing	5-1/2

TVDPath	MDPath
1905.0	1905.0
2435.0	2435.0
3845.0	3850.0
4555.0	4564.5
5915.0	5933.1
6065.0	6084.1
7225.0	7251.5
8465.0	8499.3
9610.0	9723.0

RECEIVED

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 Sand	0.00	

