

Project: Lennox 32 State 5H
 Site: Lennox 32 State 5H
 Well: Lennox 32 State 5H
 Wellbore: Lennox 32 State 5H
 Design: 181024 Lennox 32 State 5H



Azimuths to Grid North
 True North: -0.50°
 Magnetic North: 6.09°

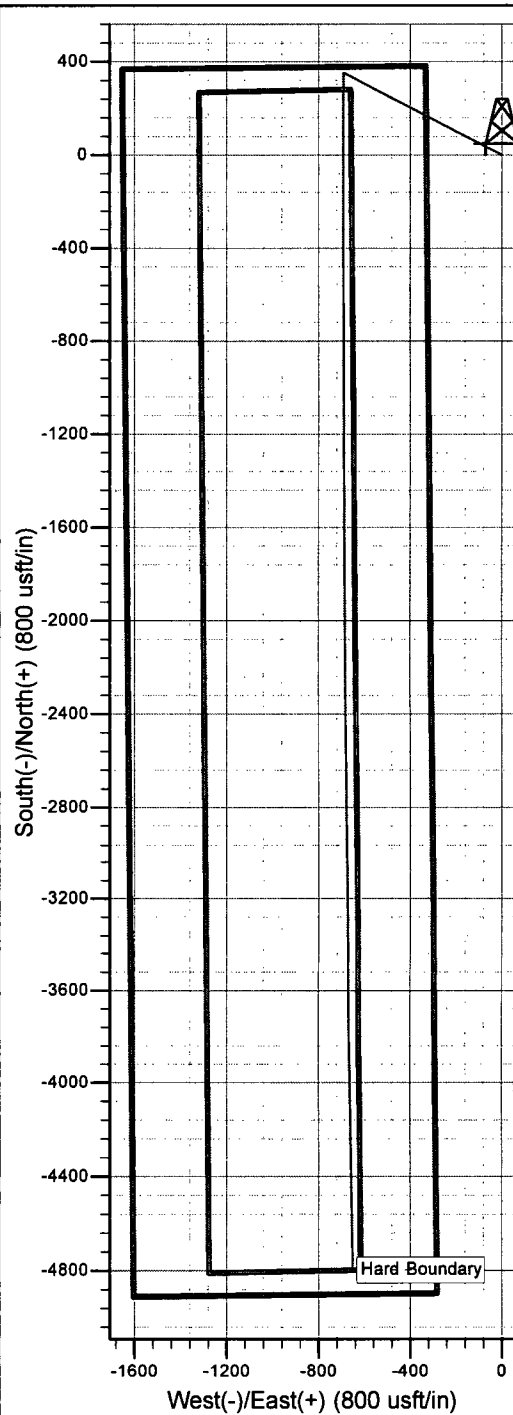
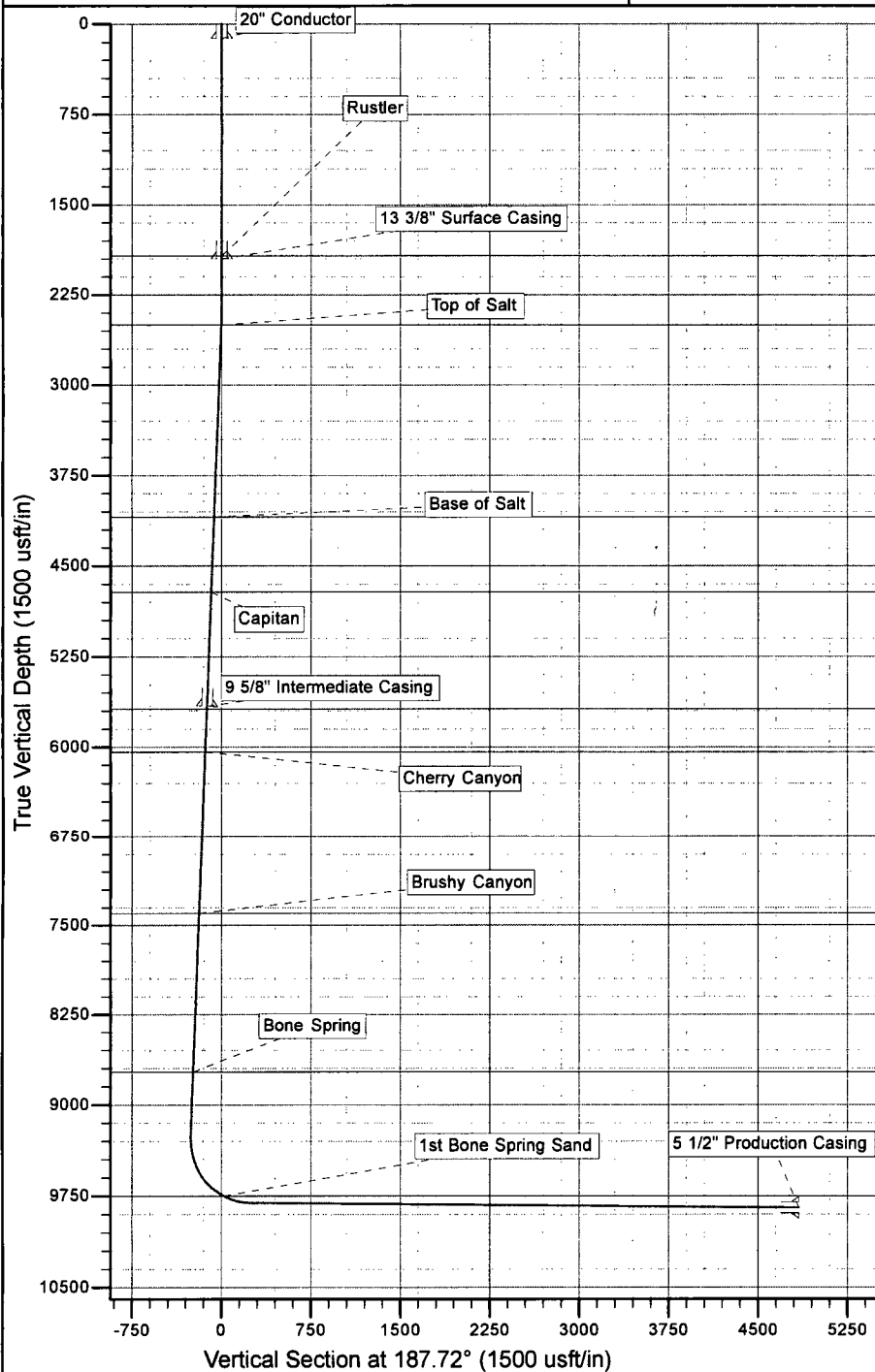
Magnetic Field
 Strength: 47974.8snT
 Dip Angle: 60.15°
 Date: 10/25/2018
 Model: IGRF2010

CASING DETAILS

TVD	MD	Name	Size
120.0	120.0	20" Conductor	20
1951.0	1951.0	13 3/8" Surface Casing	13-3/8
5661.0	5681.9	9 5/8" Intermediate Casing	9-5/8
9847.0	14780.0	5 1/2" Production Casing	5-1/2

FORMATION TOP DETAILS

TVDPth	MDPth	Formation	DipAngle	DipDir
1926.0	1926.0	Rustler	0.00	
2501.0	2501.4	Top of Salt	0.00	
4096.0	4106.8	Base of Salt	0.00	
4716.0	4730.8	Capitan	0.00	
5686.0	5707.0	Delaware	0.00	
6041.0	6064.3	Cherry Canyon	0.00	
7396.0	7428.1	Brushy Canyon	0.00	
8731.0	8771.7	Bone Spring	0.00	
9751.0	9901.2	1st Bone Spring Sand	0.00	





Caza Operating LLC

Lennox 32 State 5H

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Lennox 32 State 5H

Lennox 32 State 5H

Plan: 181024 Lennox 32 State 5H

Morcor Standard Plan

26 October, 2018

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OCT 29 2018
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**MORCOR
ENGINEERING**

Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Lennox 32 State 5H
Project:	Lennox 32 State 5H	TVD Reference:	WELL @ 3557.0usft (Original Well Elev)
Site:	Lennox 32 State 5H	MD Reference:	WELL @ 3557.0usft (Original Well Elev)
Well:	Lennox 32 State 5H	North Reference:	Grid
Wellbore:	Lennox 32 State 5H	Survey Calculation Method:	Minimum Curvature
Design:	181024 Lennox 32 State 5H	Database:	EDM 5000.1 Single User Db

Project	Lennox 32 State 5H		
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 5H		
Site Position:		Northing:	493,933.10 usft
From:	Lat/Long	Easting:	831,757.28 usft
Position Uncertainty:	1.0 usft	Slot Radius:	17-1/2 "
		Latitude:	32° 21' 15.790 N
		Longitude:	103° 23' 34.231 W
		Grid Convergence:	0.50 °

Well	Lennox 32 State 5H		
Well Position	+N/-S	0.0 usft	Northing: 493,933.10 usft
	+E/-W	0.0 usft	Easting: 831,757.28 usft
Position Uncertainty	1.0 usft		Latitude: 32° 21' 15.790 N
		Wellhead Elevation:	usft
			Longitude: 103° 23' 34.231 W
			Ground Level: 3,535.0 usft

Wellbore	Lennox 32 State 5H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/25/2018	6.60	60.15	47,975

Design	181024 Lennox 32 State 5H			
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	187.72

Survey Tool Program	Date 10/26/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	14,780.0	181024 Lennox 32 State 5H (Lennox 32 S	MWD	MWD - Standard

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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)
0.0	0.00	0.00	0.0	-3,557.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
100.0	0.00	297.00	100.0	-3,457.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
120.0	0.00	297.00	120.0	-3,437.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
20" Conductor										
200.0	0.00	297.00	200.0	-3,357.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
300.0	0.00	297.00	300.0	-3,257.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
400.0	0.00	297.00	400.0	-3,157.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
500.0	0.00	297.00	500.0	-3,057.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
600.0	0.00	297.00	600.0	-2,957.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
700.0	0.00	297.00	700.0	-2,857.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
800.0	0.00	297.00	800.0	-2,757.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
900.0	0.00	297.00	900.0	-2,657.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
1,000.0	0.00	297.00	1,000.0	-2,557.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
1,100.0	0.00	297.00	1,100.0	-2,457.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
1,200.0	0.00	297.00	1,200.0	-2,357.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
1,300.0	0.00	297.00	1,300.0	-2,257.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
1,400.0	0.00	297.00	1,400.0	-2,157.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
1,500.0	0.00	297.00	1,500.0	-2,057.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
1,600.0	0.00	297.00	1,600.0	-1,957.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
1,700.0	0.00	297.00	1,700.0	-1,857.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
1,800.0	0.00	297.00	1,800.0	-1,757.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
1,900.0	0.00	297.00	1,900.0	-1,657.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
1,926.0	0.00	297.00	1,926.0	-1,631.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
Rustler										
1,951.0	0.00	297.00	1,951.0	-1,606.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
13 3/8" Surface Casing										
2,000.0	0.00	297.00	2,000.0	-1,557.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
2,100.0	0.00	297.00	2,100.0	-1,457.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00

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Wellbore:	Lennox 32 State 5H	Survey Calculation Method:	Minimum Curvature
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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	297.00	2,200.0	-1,357.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
2,300.0	0.00	297.00	2,300.0	-1,257.0	0.0	0.0	831,757.28	493,933.10	0.00	0.00
Start Build 3.25										
2,400.0	3.25	297.00	2,399.9	-1,157.1	1.3	-2.5	831,754.75	493,934.39	-0.94	3.25
2,500.0	6.50	297.00	2,499.6	-1,057.4	5.1	-10.1	831,747.18	493,938.25	-3.74	3.25
Start 6700.0 hold at 2500.0 MD										
2,501.4	6.50	297.00	2,501.0	-1,056.0	5.2	-10.2	831,747.03	493,938.32	-3.80	0.00
Top of Salt										
2,600.0	6.50	297.00	2,598.9	-958.1	10.3	-20.2	831,737.09	493,943.39	-7.48	0.00
2,700.0	6.50	297.00	2,698.3	-858.7	15.4	-30.3	831,727.01	493,948.53	-11.22	0.00
2,800.0	6.50	297.00	2,797.6	-759.4	20.6	-40.4	831,716.92	493,953.67	-14.95	0.00
2,900.0	6.50	297.00	2,897.0	-660.0	25.7	-50.4	831,706.83	493,958.81	-18.69	0.00
3,000.0	6.50	297.00	2,996.4	-560.6	30.8	-60.5	831,696.75	493,963.95	-22.43	0.00
3,100.0	6.50	297.00	3,095.7	-461.3	36.0	-70.6	831,686.66	493,969.08	-26.17	0.00
3,200.0	6.50	297.00	3,195.1	-361.9	41.1	-80.7	831,676.57	493,974.22	-29.90	0.00
3,300.0	6.50	297.00	3,294.4	-262.6	46.3	-90.8	831,666.49	493,979.36	-33.64	0.00
3,400.0	6.50	297.00	3,393.8	-163.2	51.4	-100.9	831,656.40	493,984.50	-37.38	0.00
3,500.0	6.50	297.00	3,493.1	-63.9	56.5	-111.0	831,646.31	493,989.64	-41.11	0.00
3,600.0	6.50	297.00	3,592.5	35.5	61.7	-121.0	831,636.23	493,994.78	-44.85	0.00
3,700.0	6.50	297.00	3,691.9	134.9	66.8	-131.1	831,626.14	493,999.92	-48.59	0.00
3,800.0	6.50	297.00	3,791.2	234.2	72.0	-141.2	831,616.06	494,005.06	-52.33	0.00
3,900.0	6.50	297.00	3,890.6	333.6	77.1	-151.3	831,605.97	494,010.20	-56.06	0.00
4,000.0	6.50	297.00	3,989.9	432.9	82.2	-161.4	831,595.88	494,015.34	-59.80	0.00
4,100.0	6.50	297.00	4,089.3	532.3	87.4	-171.5	831,585.80	494,020.48	-63.54	0.00
4,106.8	6.50	297.00	4,096.0	539.0	87.7	-172.2	831,585.11	494,020.82	-63.79	0.00
Base of Salt										
4,200.0	6.50	297.00	4,188.6	631.6	92.5	-181.6	831,575.71	494,025.62	-67.28	0.00
4,300.0	6.50	297.00	4,288.0	731.0	97.7	-191.7	831,565.62	494,030.76	-71.01	0.00

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4,400.0	6.50	297.00	4,387.4	830.4	102.8	-201.7	831,555.54	494,035.90	-74.75	0.00	
4,500.0	6.50	297.00	4,486.7	929.7	107.9	-211.8	831,545.45	494,041.03	-78.49	0.00	
4,600.0	6.50	297.00	4,586.1	1,029.1	113.1	-221.9	831,535.36	494,046.17	-82.22	0.00	
4,700.0	6.50	297.00	4,685.4	1,128.4	118.2	-232.0	831,525.28	494,051.31	-85.96	0.00	
4,730.8	6.50	297.00	4,716.0	1,159.0	119.8	-235.1	831,522.17	494,052.89	-87.11	0.00	
Capitan											
4,800.0	6.50	297.00	4,784.8	1,227.8	123.3	-242.1	831,515.19	494,056.45	-89.70	0.00	
4,900.0	6.50	297.00	4,884.1	1,327.1	128.5	-252.2	831,505.10	494,061.59	-93.44	0.00	
5,000.0	6.50	297.00	4,983.5	1,426.5	133.6	-262.3	831,495.02	494,066.73	-97.17	0.00	
5,100.0	6.50	297.00	5,082.9	1,525.9	138.8	-272.3	831,484.93	494,071.87	-100.91	0.00	
5,200.0	6.50	297.00	5,182.2	1,625.2	143.9	-282.4	831,474.84	494,077.01	-104.65	0.00	
5,300.0	6.50	297.00	5,281.6	1,724.6	149.0	-292.5	831,464.76	494,082.15	-108.39	0.00	
5,400.0	6.50	297.00	5,380.9	1,823.9	154.2	-302.6	831,454.67	494,087.29	-112.12	0.00	
5,500.0	6.50	297.00	5,480.3	1,923.3	159.3	-312.7	831,444.59	494,092.43	-115.86	0.00	
5,600.0	6.50	297.00	5,579.6	2,022.6	164.5	-322.8	831,434.50	494,097.57	-119.60	0.00	
5,681.9	6.50	297.00	5,661.0	2,104.0	168.7	-331.0	831,426.24	494,101.78	-122.66	0.00	
9 5/8" Intermediate Casing											
5,700.0	6.50	297.00	5,679.0	2,122.0	169.6	-332.9	831,424.41	494,102.71	-123.33	0.00	
5,707.0	6.50	297.00	5,686.0	2,129.0	170.0	-333.6	831,423.70	494,103.07	-123.60	0.00	
Delaware											
5,800.0	6.50	297.00	5,778.4	2,221.4	174.7	-343.0	831,414.33	494,107.85	-127.07	0.00	
5,900.0	6.50	297.00	5,877.7	2,320.7	179.9	-353.0	831,404.24	494,112.99	-130.81	0.00	
6,000.0	6.50	297.00	5,977.1	2,420.1	185.0	-363.1	831,394.15	494,118.12	-134.55	0.00	
6,064.3	6.50	297.00	6,041.0	2,484.0	188.3	-369.6	831,387.66	494,121.43	-136.95	0.00	
Cherry Canyon											
6,100.0	6.50	297.00	6,076.4	2,519.4	190.2	-373.2	831,384.07	494,123.26	-138.28	0.00	
6,200.0	6.50	297.00	6,175.8	2,618.8	195.3	-383.3	831,373.98	494,128.40	-142.02	0.00	

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6,300.0	6.50	297.00	6,275.1	2,718.1	200.4	-393.4	831,363.89	494,133.54	-145.76	0.00
6,400.0	6.50	297.00	6,374.5	2,817.5	205.6	-403.5	831,353.81	494,138.68	-149.50	0.00
6,500.0	6.50	297.00	6,473.9	2,916.9	210.7	-413.6	831,343.72	494,143.82	-153.23	0.00
6,600.0	6.50	297.00	6,573.2	3,016.2	215.9	-423.6	831,333.63	494,148.96	-156.97	0.00
6,700.0	6.50	297.00	6,672.6	3,115.6	221.0	-433.7	831,323.55	494,154.10	-160.71	0.00
6,800.0	6.50	297.00	6,771.9	3,214.9	226.1	-443.8	831,313.46	494,159.24	-164.44	0.00
6,900.0	6.50	297.00	6,871.3	3,314.3	231.3	-453.9	831,303.37	494,164.38	-168.18	0.00
7,000.0	6.50	297.00	6,970.6	3,413.6	236.4	-464.0	831,293.29	494,169.52	-171.92	0.00
7,100.0	6.50	297.00	7,070.0	3,513.0	241.6	-474.1	831,283.20	494,174.66	-175.66	0.00
7,200.0	6.50	297.00	7,169.4	3,612.4	246.7	-484.2	831,273.12	494,179.80	-179.39	0.00
7,300.0	6.50	297.00	7,268.7	3,711.7	251.8	-494.2	831,263.03	494,184.94	-183.13	0.00
7,400.0	6.50	297.00	7,368.1	3,811.1	257.0	-504.3	831,252.94	494,190.08	-186.87	0.00
7,428.1	6.50	297.00	7,396.0	3,839.0	258.4	-507.2	831,250.11	494,191.52	-187.92	0.00
Brushy Canyon										
7,500.0	6.50	297.00	7,467.4	3,910.4	262.1	-514.4	831,242.86	494,195.21	-190.61	0.00
7,600.0	6.50	297.00	7,566.8	4,009.8	267.3	-524.5	831,232.77	494,200.35	-194.34	0.00
7,700.0	6.50	297.00	7,666.1	4,109.1	272.4	-534.6	831,222.68	494,205.49	-198.08	0.00
7,800.0	6.50	297.00	7,765.5	4,208.5	277.5	-544.7	831,212.60	494,210.63	-201.82	0.00
7,900.0	6.50	297.00	7,864.9	4,307.9	282.7	-554.8	831,202.51	494,215.77	-205.55	0.00
8,000.0	6.50	297.00	7,964.2	4,407.2	287.8	-564.9	831,192.42	494,220.91	-209.29	0.00
8,100.0	6.50	297.00	8,063.6	4,506.6	292.9	-574.9	831,182.34	494,226.05	-213.03	0.00
8,200.0	6.50	297.00	8,162.9	4,605.9	298.1	-585.0	831,172.25	494,231.19	-216.77	0.00
8,300.0	6.50	297.00	8,262.3	4,705.3	303.2	-595.1	831,162.16	494,236.33	-220.50	0.00
8,400.0	6.50	297.00	8,361.6	4,804.6	308.4	-605.2	831,152.08	494,241.47	-224.24	0.00
8,500.0	6.50	297.00	8,461.0	4,904.0	313.5	-615.3	831,141.99	494,246.61	-227.98	0.00
8,600.0	6.50	297.00	8,560.4	5,003.4	318.6	-625.4	831,131.90	494,251.75	-231.72	0.00
8,700.0	6.50	297.00	8,659.7	5,102.7	323.8	-635.5	831,121.82	494,256.89	-235.45	0.00

Company: Caza Operating LLC
Project: Lennox 32 State 5H
Site: Lennox 32 State 5H
Well: Lennox 32 State 5H
Wellbore: Lennox 32 State 5H
Design: 181024 Lennox 32 State 5H

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well Lennox 32 State 5H
WELL @ 3557.0usft (Original Well Elev)
WELL @ 3557.0usft (Original Well Elev)
Grid
Minimum Curvature
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)
8,771.7	6.50	297.00	8,731.0	5,174.0	327.5	-642.7	831,114.58	494,260.57	-238.13	0.00
Bone Spring										
8,800.0	6.50	297.00	8,759.1	5,202.1	328.9	-645.5	831,111.73	494,262.03	-239.19	0.00
8,900.0	6.50	297.00	8,858.4	5,301.4	334.1	-655.6	831,101.64	494,267.17	-242.93	0.00
9,000.0	6.50	297.00	8,957.8	5,400.8	339.2	-665.7	831,091.56	494,272.30	-246.66	0.00
9,100.0	6.50	297.00	9,057.1	5,500.1	344.3	-675.8	831,081.47	494,277.44	-250.40	0.00
9,200.0	6.50	297.00	9,156.5	5,599.5	349.5	-685.9	831,071.39	494,282.58	-254.14	0.00
Start Drop -6.50										
9,300.0	0.00	0.00	9,256.3	5,699.3	352.1	-690.9	831,066.34	494,285.16	-256.01	6.50
Start 40.0 hold at 9300.0 MD										
9,340.0	0.00	180.00	9,296.3	5,739.3	352.1	-690.9	831,066.34	494,285.16	-256.01	0.00
Start Build 11.23										
9,400.0	6.74	180.00	9,356.2	5,799.2	348.5	-690.9	831,066.34	494,281.63	-252.52	11.23
9,500.0	17.97	180.00	9,453.7	5,896.7	327.2	-690.9	831,066.34	494,260.27	-231.35	11.23
9,600.0	29.20	180.00	9,545.2	5,988.2	287.2	-690.9	831,066.34	494,220.33	-191.77	11.23
9,700.0	40.43	180.00	9,627.2	6,070.2	230.2	-690.9	831,066.34	494,163.33	-135.29	11.23
9,800.0	51.66	180.00	9,696.5	6,139.5	158.4	-690.9	831,066.34	494,091.46	-64.08	11.23
9,900.0	62.89	180.00	9,750.4	6,193.4	74.4	-690.9	831,066.34	494,007.48	19.15	11.23
9,901.2	63.03	180.00	9,751.0	6,194.0	73.3	-690.9	831,066.34	494,006.37	20.25	11.23
1st Bone Spring Sand										
10,000.0	74.12	180.00	9,787.0	6,230.0	-18.5	-690.9	831,066.34	493,914.58	111.20	11.23
10,100.0	85.35	180.00	9,804.8	6,247.8	-116.8	-690.9	831,066.34	493,816.34	208.55	11.23
10,137.0	89.50	180.00	9,806.5	6,249.5	-153.7	-690.9	831,066.34	493,779.39	245.17	11.23
Start Turn -0.02										
10,200.0	89.50	179.99	9,807.0	6,250.0	-216.7	-690.9	831,066.34	493,716.39	307.60	0.02
10,300.0	89.50	179.96	9,807.9	6,250.9	-316.7	-690.9	831,066.39	493,616.39	406.68	0.02
10,400.0	89.50	179.94	9,808.8	6,251.8	-416.7	-690.8	831,066.47	493,516.40	505.76	0.02
10,500.0	89.50	179.92	9,809.7	6,252.7	-516.7	-690.7	831,066.58	493,416.40	604.83	0.02



Morcor Engineering
Morcor Standard Plan

MORCOR
ENGINEERING

Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Lennox 32 State 5H
Project:	Lennox 32 State 5H	TVD Reference:	WELL @ 3557.0usft (Original Well Elev)
Site:	Lennox 32 State 5H	MD Reference:	WELL @ 3557.0usft (Original Well Elev)
Well:	Lennox 32 State 5H	North Reference:	Grid
Wellbore:	Lennox 32 State 5H	Survey Calculation Method:	Minimum Curvature
Design:	181024 Lennox 32 State 5H	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)	
10,600.0	89.50	179.90	9,810.5	6,253.5	-616.7	-690.5	831,066.74	493,316.41	703.90	0.02	
10,700.0	89.50	179.88	9,811.4	6,254.4	-716.7	-690.3	831,066.93	493,216.41	802.96	0.02	
10,800.0	89.50	179.86	9,812.3	6,255.3	-816.7	-690.1	831,067.16	493,116.41	902.02	0.02	
10,900.0	89.50	179.84	9,813.1	6,256.1	-916.7	-689.8	831,067.43	493,016.42	1,001.07	0.02	
11,000.0	89.50	179.81	9,814.0	6,257.0	-1,016.7	-689.5	831,067.74	492,916.42	1,100.12	0.02	
11,100.0	89.50	179.79	9,814.9	6,257.9	-1,116.7	-689.2	831,068.08	492,816.43	1,199.16	0.02	
11,200.0	89.50	179.77	9,815.8	6,258.8	-1,216.7	-688.8	831,068.46	492,716.43	1,298.20	0.02	
11,300.0	89.50	179.75	9,816.6	6,259.6	-1,316.7	-688.4	831,068.88	492,616.44	1,397.23	0.02	
11,400.0	89.50	179.73	9,817.5	6,260.5	-1,416.7	-687.9	831,069.33	492,516.44	1,496.26	0.02	
11,500.0	89.50	179.71	9,818.4	6,261.4	-1,516.7	-687.4	831,069.83	492,416.45	1,595.28	0.02	
11,600.0	89.50	179.68	9,819.3	6,262.3	-1,616.7	-686.9	831,070.36	492,316.45	1,694.30	0.02	
11,700.0	89.50	179.66	9,820.1	6,263.1	-1,716.6	-686.3	831,070.93	492,216.46	1,793.31	0.02	
11,800.0	89.50	179.64	9,821.0	6,264.0	-1,816.6	-685.7	831,071.53	492,116.46	1,892.32	0.02	
11,900.0	89.50	179.62	9,821.9	6,264.9	-1,916.6	-685.1	831,072.18	492,016.47	1,991.32	0.02	
12,000.0	89.50	179.60	9,822.7	6,265.7	-2,016.6	-684.4	831,072.86	491,916.47	2,090.31	0.02	
12,100.0	89.50	179.58	9,823.6	6,266.6	-2,116.6	-683.7	831,073.58	491,816.48	2,189.30	0.02	
12,200.0	89.50	179.56	9,824.5	6,267.5	-2,216.6	-682.9	831,074.34	491,716.49	2,288.29	0.02	
12,300.0	89.50	179.53	9,825.4	6,268.4	-2,316.6	-682.1	831,075.13	491,616.49	2,387.27	0.02	
12,400.0	89.50	179.51	9,826.2	6,269.2	-2,416.6	-681.3	831,075.96	491,516.50	2,486.24	0.02	
12,500.0	89.50	179.49	9,827.1	6,270.1	-2,516.6	-680.4	831,076.83	491,416.51	2,585.21	0.02	
12,600.0	89.50	179.47	9,828.0	6,271.0	-2,616.6	-679.5	831,077.74	491,316.52	2,684.17	0.02	
12,700.0	89.50	179.45	9,828.9	6,271.9	-2,716.6	-678.6	831,078.68	491,216.52	2,783.13	0.02	
12,800.0	89.50	179.43	9,829.7	6,272.7	-2,816.6	-677.6	831,079.66	491,116.53	2,882.08	0.02	
12,900.0	89.50	179.40	9,830.6	6,273.6	-2,916.6	-676.6	831,080.68	491,016.54	2,981.03	0.02	
13,000.0	89.50	179.38	9,831.5	6,274.5	-3,016.6	-675.5	831,081.74	490,916.55	3,079.97	0.02	
13,100.0	89.50	179.36	9,832.3	6,275.3	-3,116.5	-674.4	831,082.84	490,816.56	3,178.91	0.02	
13,200.0	89.50	179.34	9,833.2	6,276.2	-3,216.5	-673.3	831,083.97	490,716.57	3,277.84	0.02	



Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Lennox 32 State 5H
Project:	Lennox 32 State 5H	TVD Reference:	WELL @ 3557.0usft (Original Well Elev)
Site:	Lennox 32 State 5H	MD Reference:	WELL @ 3557.0usft (Original Well Elev)
Well:	Lennox 32 State 5H	North Reference:	Grid
Wellbore:	Lennox 32 State 5H	Survey Calculation Method:	Minimum Curvature
Design:	181024 Lennox 32 State 5H	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)
13,300.0	89.50	179.32	9,834.1	6,277.1	-3,316.5	-672.1	831,085.14	490,616.58	3,376.76	0.02
13,400.0	89.50	179.30	9,835.0	6,278.0	-3,416.5	-670.9	831,086.35	490,516.59	3,475.68	0.02
13,500.0	89.50	179.28	9,835.8	6,278.8	-3,516.5	-669.7	831,087.59	490,416.60	3,574.60	0.02
13,600.0	89.50	179.25	9,836.7	6,279.7	-3,616.5	-668.4	831,088.88	490,316.62	3,673.50	0.02
13,700.0	89.50	179.23	9,837.6	6,280.6	-3,716.5	-667.1	831,090.20	490,216.63	3,772.41	0.02
13,800.0	89.50	179.21	9,838.5	6,281.5	-3,816.5	-665.7	831,091.55	490,116.64	3,871.31	0.02
13,900.0	89.50	179.19	9,839.3	6,282.3	-3,916.4	-664.3	831,092.95	490,016.66	3,970.20	0.02
14,000.0	89.50	179.17	9,840.2	6,283.2	-4,016.4	-662.9	831,094.38	489,916.67	4,069.08	0.02
14,100.0	89.50	179.15	9,841.1	6,284.1	-4,116.4	-661.4	831,095.85	489,816.68	4,167.96	0.02
14,200.0	89.50	179.12	9,841.9	6,284.9	-4,216.4	-659.9	831,097.36	489,716.70	4,266.84	0.02
14,300.0	89.50	179.10	9,842.8	6,285.8	-4,316.4	-658.4	831,098.91	489,616.72	4,365.71	0.02
14,400.0	89.50	179.08	9,843.7	6,286.7	-4,416.4	-656.8	831,100.49	489,516.73	4,464.57	0.02
14,500.0	89.50	179.06	9,844.6	6,287.6	-4,516.4	-655.2	831,102.11	489,416.75	4,563.43	0.02
14,600.0	89.50	179.04	9,845.4	6,288.4	-4,616.3	-653.5	831,103.77	489,316.77	4,662.28	0.02
14,700.0	89.50	179.02	9,846.3	6,289.3	-4,716.3	-651.8	831,105.47	489,216.78	4,761.13	0.02
14,780.0	89.50	179.00	9,847.0	6,290.0	-4,796.3	-650.4	831,106.85	489,136.80	4,840.20	0.02

TD at 14780.0 - 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
1,951.0	1,951.0	13 3/8" Surface Casing	13-3/8	17-1/2
5,681.9	5,681.0	9 5/8" Intermediate Casing	9-5/8	12-1/4
14,780.0	9,847.0	5 1/2" Production Casing	5-1/2	8-3/4

Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Lennox 32 State 5H
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Well:	Lennox 32 State 5H	North Reference:	Grid
Wellbore:	Lennox 32 State 5H	Survey Calculation Method:	Minimum Curvature
Design:	181024 Lennox 32 State 5H	Database:	EDM 5000.1 Single User Db

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,106.8	4,096.0	Base of Salt		0.00		
9,901.2	9,751.0	1st Bone Spring Sand		0.00		
4,730.8	4,716.0	Capitan		0.00		
6,064.3	6,041.0	Cherry Canyon		0.00		
1,926.0	1,926.0	Rustler		0.00		
8,771.7	8,731.0	Bone Spring		0.00		
2,501.4	2,501.0	Top of Salt		0.00		
7,428.1	7,396.0	Brushy Canyon		0.00		
5,707.0	5,686.0	Delaware		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
2,300.0	2,300.0	0.0	0.0	Start Build 3.25	
2,500.0	2,499.6	5.1	-10.1	Start 6700.0 hold at 2500.0 MD	
9,200.0	9,156.5	349.5	-685.9	Start Drop -6.50	
9,300.0	9,256.3	352.1	-690.9	Start 40.0 hold at 9300.0 MD	
9,340.0	9,296.3	352.1	-690.9	Start Build 11.23	
10,137.0	9,806.5	-153.7	-690.9	Start Turn -0.02	
14,780.0	9,847.0	-4,796.3	-650.4	TD at 14780.0	

Checked By: _____	Approved By: _____	Date: _____
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