

Project: Lennox 32 State 9H
 Site: Lennox 32 State 9H
 Well: Lennox 32 State 9H
 Wellbore: Lennox 32 State 9H
 Design: 181029 Lennox 32 State 9H



**Caza
Petroleum**

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Azimuths to Grid North
 True North: -0.51°
 Magnetic North: 6.08°

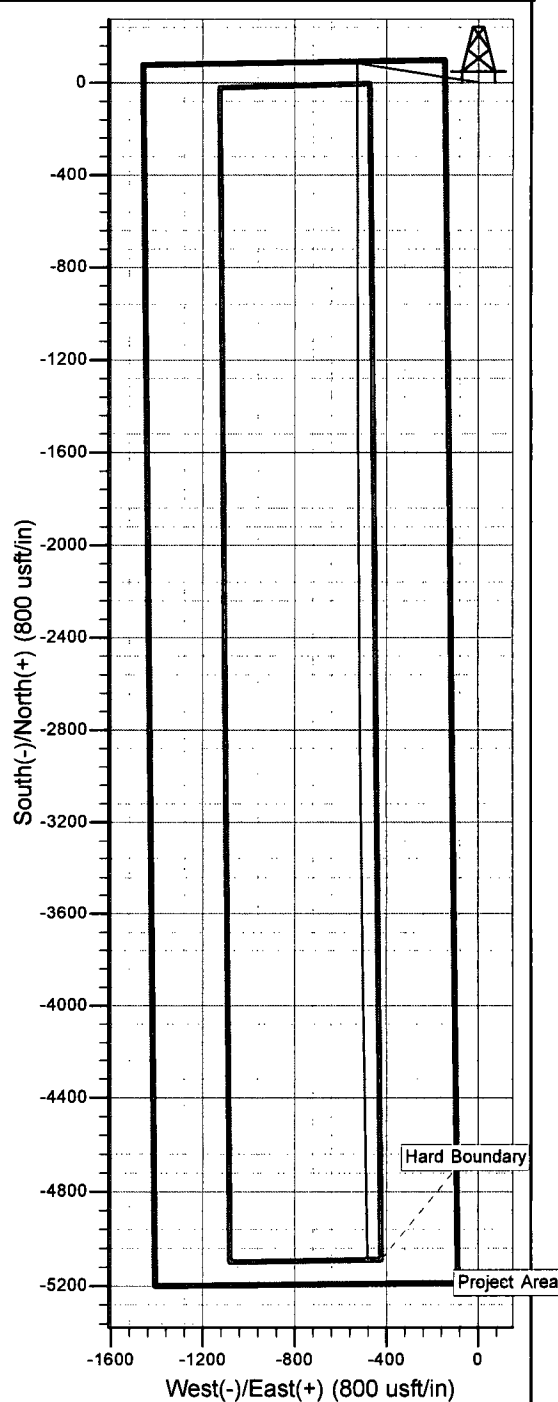
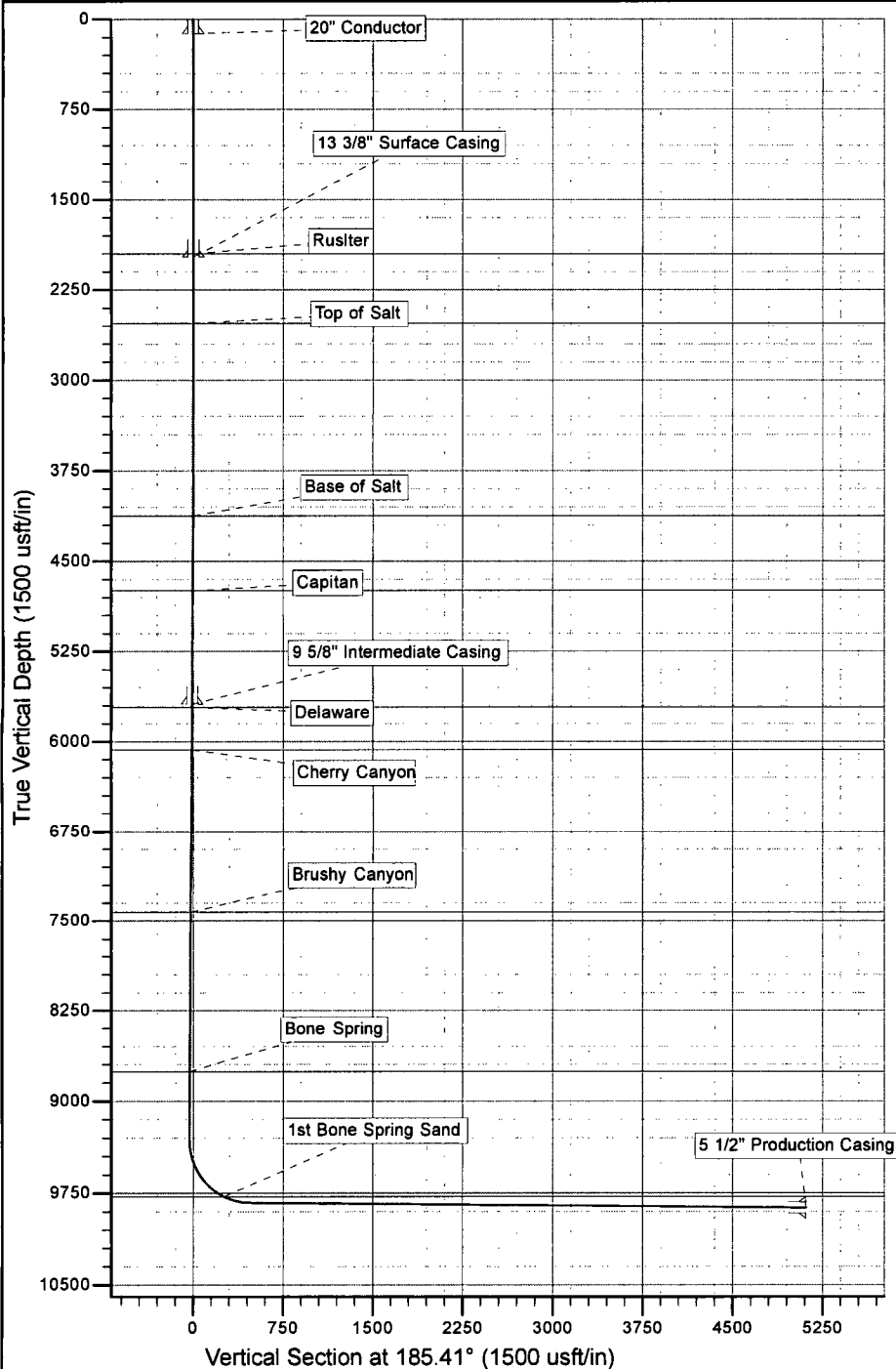
Magnetic Field
 Strength: 47974.9snT
 Dip Angle: 60.15°
 Date: 10/29/2018
 Model: IGRF2010

CASING DETAILS

TVD	MD	Name	Size
120.0	120.0	20" Conductor	20
1978.0	1978.0	13 3/8" Surface Casing	13-3/8
5688.0	5696.6	9 5/8" Intermediate Casing	9-5/8
9871.4	14810.0	5 1/2" Production Casing	5-1/2

FORMATION TOP DETAILS

TVDPPath	MDPath	Formation	DipAngle	DipDir
1953.0	1953.0	Ruslter	0.00	
2528.0	2528.0	Top of Salt	0.00	
4123.0	4123.1	Base of Salt	0.00	
4743.0	4746.4	Capitan	0.00	
5713.0	5721.7	Delaware	0.00	
6068.0	6078.7	Cherry Canyon	0.00	
7423.0	7441.1	Brushy Canyon	0.00	
8758.0	8783.5	Bone Spring	0.00	
9778.0	9918.2	1st Bone Spring Sand	0.00	



MORCOR ENGINEERING

Caza Operating LLC

Lennox 32 State 9H

Lennox 32 State 9H

Lennox 32 State 9H

Lennox 32 State 9H

Plan: 181029 Lennox 32 State 9H

Morcor Standard Plan

29 October, 2018

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MORCOR
ENGINEERING

Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Lennox 32 State 9H
Project:	Lennox 32 State 9H	TVD Reference:	WELL @ 3561.0usft (Original Well Elev)
Site:	Lennox 32 State 9H	MD Reference:	WELL @ 3561.0usft (Original Well Elev)
Well:	Lennox 32 State 9H	North Reference:	Grid
Wellbore:	Lennox 32 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	181029 Lennox 32 State 9H	Database:	EDM 5000.1 Single User Db

Project	Lennox 32 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	Lennox 32 State 9H		
Site Position:		Northing:	494,251.94 usft
From:	Lat/Long	Easting:	834,203.49 usft
Position Uncertainty:	1.0 usft	Slot Radius:	17-1/2 "
		Latitude:	32° 21' 18.731 N
		Longitude:	103° 23' 5.683 W
		Grid Convergence:	0.51 °

Well	Lennox 32 State 9H					
Well Position	+N/-S	0.0 usft	Northing:	494,251.94 usft	Latitude:	32° 21' 18.731 N
	+E/-W	0.0 usft	Easting:	834,203.49 usft	Longitude:	103° 23' 5.683 W
Position Uncertainty		1.0 usft	Wellhead Elevation:	usft	Ground Level:	3,539.0 usft

Wellbore	Lennox 32 State 9H				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	10/29/2018	6.59	60.15	47,975

Design	181029 Lennox 32 State 9H			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	185.41

Survey Tool Program	Date	10/29/2018		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
0.0	14,810.0	181029 Lennox 32 State 9H (Lennox 32 S	MWD	MWD - Standard

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Well:	Lennox 32 State 9H	North Reference:	Grid
Wellbore:	Lennox 32 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	181029 Lennox 32 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)
0.0	0.00	0.00	0.0	-3,561.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
100.0	0.00	279.00	100.0	-3,461.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
120.0	0.00	279.00	120.0	-3,441.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
20" Conductor										
200.0	0.00	279.00	200.0	-3,361.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
300.0	0.00	279.00	300.0	-3,261.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
400.0	0.00	279.00	400.0	-3,161.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
500.0	0.00	279.00	500.0	-3,061.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
600.0	0.00	279.00	600.0	-2,961.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
700.0	0.00	279.00	700.0	-2,861.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
800.0	0.00	279.00	800.0	-2,761.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
900.0	0.00	279.00	900.0	-2,661.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
1,000.0	0.00	279.00	1,000.0	-2,561.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
1,100.0	0.00	279.00	1,100.0	-2,461.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
1,200.0	0.00	279.00	1,200.0	-2,361.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
1,300.0	0.00	279.00	1,300.0	-2,261.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
1,400.0	0.00	279.00	1,400.0	-2,161.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
1,500.0	0.00	279.00	1,500.0	-2,061.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
1,600.0	0.00	279.00	1,600.0	-1,961.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
1,700.0	0.00	279.00	1,700.0	-1,861.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
1,800.0	0.00	279.00	1,800.0	-1,761.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
1,900.0	0.00	279.00	1,900.0	-1,661.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
1,953.0	0.00	279.00	1,953.0	-1,608.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
Rusiter										
1,978.0	0.00	279.00	1,978.0	-1,583.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
13 3/8" Surface Casing										
2,000.0	0.00	279.00	2,000.0	-1,561.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00
2,100.0	0.00	279.00	2,100.0	-1,461.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00

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Well:	Lennox 32 State 9H	North Reference:	Grid
Wellbore:	Lennox 32 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	181029 Lennox 32 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)	
2,200.0	0.00	279.00	2,200.0	-1,361.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
2,300.0	0.00	279.00	2,300.0	-1,261.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
2,400.0	0.00	279.00	2,400.0	-1,161.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
2,500.0	0.00	279.00	2,500.0	-1,061.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
2,528.0	0.00	279.00	2,528.0	-1,033.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
Top of Salt											
2,600.0	0.00	279.00	2,600.0	-961.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
2,700.0	0.00	279.00	2,700.0	-861.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
2,800.0	0.00	279.00	2,800.0	-761.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
2,900.0	0.00	279.00	2,900.0	-661.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
3,000.0	0.00	279.00	3,000.0	-561.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
3,100.0	0.00	279.00	3,100.0	-461.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
3,200.0	0.00	279.00	3,200.0	-361.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
3,300.0	0.00	279.00	3,300.0	-261.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
3,400.0	0.00	279.00	3,400.0	-161.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
3,500.0	0.00	279.00	3,500.0	-61.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
3,600.0	0.00	279.00	3,600.0	39.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
3,700.0	0.00	279.00	3,700.0	139.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
3,800.0	0.00	279.00	3,800.0	239.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
3,900.0	0.00	279.00	3,900.0	339.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
4,000.0	0.00	279.00	4,000.0	439.0	0.0	0.0	834,203.49	494,251.94	0.00	0.00	
Start Build 3.00											
4,100.0	3.00	279.00	4,100.0	539.0	0.4	-2.6	834,200.91	494,252.35	-0.16	3.00	
4,123.1	3.69	279.00	4,123.0	562.0	0.6	-3.9	834,199.57	494,252.56	-0.25	3.00	
Base of Salt											
4,200.0	6.00	279.00	4,199.6	638.6	1.6	-10.3	834,193.16	494,253.58	-0.66	3.00	
Start 4900.0 hold at 4200.0 MD											
4,300.0	6.00	279.00	4,299.1	738.1	3.3	-20.7	834,182.83	494,255.21	-1.31	0.00	

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Well:	Lennox 32 State 9H						North Reference:	Grid			
Wellbore:	Lennox 32 State 9H						Survey Calculation Method:	Minimum Curvature			
Design:	181029 Lennox 32 State 9H						Database:	EDM 5000.1 Single User Db			

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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)	
4,400.0	6.00	279.00	4,398.5	837.5	4.9	-31.0	834,172.51	494,256.85	-1.97	0.00	
4,500.0	6.00	279.00	4,498.0	937.0	6.5	-41.3	834,162.18	494,258.48	-2.62	0.00	
4,600.0	6.00	279.00	4,597.4	1,036.4	8.2	-51.6	834,151.86	494,260.12	-3.28	0.00	
4,700.0	6.00	279.00	4,696.9	1,135.9	9.8	-62.0	834,141.54	494,261.75	-3.93	0.00	
4,746.4	6.00	279.00	4,743.0	1,182.0	10.6	-66.7	834,136.75	494,262.51	-4.23	0.00	
Capitan											
4,800.0	6.00	279.00	4,796.3	1,235.3	11.4	-72.3	834,131.21	494,263.39	-4.58	0.00	
4,900.0	6.00	279.00	4,895.8	1,334.8	13.1	-82.6	834,120.89	494,265.02	-5.24	0.00	
5,000.0	6.00	279.00	4,995.3	1,434.3	14.7	-92.9	834,110.56	494,266.66	-5.89	0.00	
5,100.0	6.00	279.00	5,094.7	1,533.7	16.4	-103.3	834,100.24	494,268.29	-6.55	0.00	
5,200.0	6.00	279.00	5,194.2	1,633.2	18.0	-113.6	834,089.92	494,269.93	-7.20	0.00	
5,300.0	6.00	279.00	5,293.6	1,732.6	19.6	-123.9	834,079.59	494,271.56	-7.86	0.00	
5,400.0	6.00	279.00	5,393.1	1,832.1	21.3	-134.2	834,069.27	494,273.20	-8.51	0.00	
5,500.0	6.00	279.00	5,492.5	1,931.5	22.9	-144.5	834,058.94	494,274.83	-9.17	0.00	
5,600.0	6.00	279.00	5,592.0	2,031.0	24.5	-154.9	834,048.62	494,276.47	-9.82	0.00	
5,696.6	6.00	279.00	5,688.0	2,127.0	26.1	-164.8	834,038.65	494,278.05	-10.46	0.00	
9 5/8" Intermediate Casing											
5,700.0	6.00	279.00	5,691.4	2,130.4	26.2	-165.2	834,038.29	494,278.11	-10.48	0.00	
5,721.7	6.00	279.00	5,713.0	2,152.0	26.5	-167.4	834,036.05	494,278.46	-10.62	0.00	
Delaware											
5,800.0	6.00	279.00	5,790.9	2,229.9	27.8	-175.5	834,027.97	494,279.74	-11.13	0.00	
5,900.0	6.00	279.00	5,890.3	2,329.3	29.4	-185.8	834,017.65	494,281.38	-11.79	0.00	
6,000.0	6.00	279.00	5,989.8	2,428.8	31.1	-196.2	834,007.32	494,283.01	-12.44	0.00	
6,078.7	6.00	279.00	6,068.0	2,507.0	32.4	-204.3	833,999.20	494,284.30	-12.96	0.00	
Cherry Canyon											
6,100.0	6.00	279.00	6,089.2	2,528.2	32.7	-206.5	833,997.00	494,284.65	-13.10	0.00	
6,200.0	6.00	279.00	6,188.7	2,627.7	34.3	-216.8	833,986.67	494,286.28	-13.75	0.00	

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6,300.0	6.00	279.00	6,288.1	2,727.1	36.0	-227.1	833,976.35	494,287.92	-14.41	0.00	
6,400.0	6.00	279.00	6,387.6	2,826.6	37.6	-237.5	833,966.03	494,289.55	-15.06	0.00	
6,500.0	6.00	279.00	6,487.0	2,926.0	39.2	-247.8	833,955.70	494,291.19	-15.72	0.00	
6,600.0	6.00	279.00	6,586.5	3,025.5	40.9	-258.1	833,945.38	494,292.82	-16.37	0.00	
6,700.0	6.00	279.00	6,685.9	3,124.9	42.5	-268.4	833,935.05	494,294.46	-17.03	0.00	
6,800.0	6.00	279.00	6,785.4	3,224.4	44.2	-278.8	833,924.73	494,296.09	-17.68	0.00	
6,900.0	6.00	279.00	6,884.8	3,323.8	45.8	-289.1	833,914.40	494,297.73	-18.34	0.00	
7,000.0	6.00	279.00	6,984.3	3,423.3	47.4	-299.4	833,904.08	494,299.36	-18.99	0.00	
7,100.0	6.00	279.00	7,083.7	3,522.7	49.1	-309.7	833,893.76	494,301.00	-19.65	0.00	
7,200.0	6.00	279.00	7,183.2	3,622.2	50.7	-320.1	833,883.43	494,302.63	-20.30	0.00	
7,300.0	6.00	279.00	7,282.7	3,721.7	52.3	-330.4	833,873.11	494,304.27	-20.96	0.00	
7,400.0	6.00	279.00	7,382.1	3,821.1	54.0	-340.7	833,862.78	494,305.90	-21.61	0.00	
7,441.1	6.00	279.00	7,423.0	3,862.0	54.6	-345.0	833,858.54	494,306.58	-21.88	0.00	
Brushy Canyon											
7,500.0	6.00	279.00	7,481.6	3,920.6	55.6	-351.0	833,852.46	494,307.54	-22.27	0.00	
7,600.0	6.00	279.00	7,581.0	4,020.0	57.2	-361.4	833,842.14	494,309.17	-22.92	0.00	
7,700.0	6.00	279.00	7,680.5	4,119.5	58.9	-371.7	833,831.81	494,310.81	-23.58	0.00	
7,800.0	6.00	279.00	7,779.9	4,218.9	60.5	-382.0	833,821.49	494,312.44	-24.23	0.00	
7,900.0	6.00	279.00	7,879.4	4,318.4	62.1	-392.3	833,811.16	494,314.08	-24.89	0.00	
8,000.0	6.00	279.00	7,978.8	4,417.8	63.8	-402.7	833,800.84	494,315.71	-25.54	0.00	
8,100.0	6.00	279.00	8,078.3	4,517.3	65.4	-413.0	833,790.51	494,317.35	-26.20	0.00	
8,200.0	6.00	279.00	8,177.7	4,616.7	67.0	-423.3	833,780.19	494,318.98	-26.85	0.00	
8,300.0	6.00	279.00	8,277.2	4,716.2	68.7	-433.6	833,769.87	494,320.62	-27.51	0.00	
8,400.0	6.00	279.00	8,376.6	4,815.6	70.3	-443.9	833,759.54	494,322.26	-28.16	0.00	
8,500.0	6.00	279.00	8,476.1	4,915.1	71.9	-454.3	833,749.22	494,323.89	-28.82	0.00	
8,600.0	6.00	279.00	8,575.5	5,014.5	73.6	-464.6	833,738.89	494,325.53	-29.47	0.00	
8,700.0	6.00	279.00	8,675.0	5,114.0	75.2	-474.9	833,728.57	494,327.16	-30.13	0.00	

Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Lennox 32 State 9H
Project:	Lennox 32 State 9H	TVD Reference:	WELL @ 3561.0usft (Original Well Elev)
Site:	Lennox 32 State 9H	MD Reference:	WELL @ 3561.0usft (Original Well Elev)
Well:	Lennox 32 State 9H	North Reference:	Grid
Wellbore:	Lennox 32 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	181029 Lennox 32 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)
8,783.5	6.00	279.00	8,758.0	5,197.0	76.6	-483.5	833,719.95	494,328.53	-30.67	0.00
Bone Spring										
8,800.0	6.00	279.00	8,774.4	5,213.4	76.9	-485.2	833,718.25	494,328.80	-30.78	0.00
8,900.0	6.00	279.00	8,873.9	5,312.9	78.5	-495.6	833,707.92	494,330.43	-31.44	0.00
9,000.0	6.00	279.00	8,973.3	5,412.3	80.1	-505.9	833,697.60	494,332.07	-32.09	0.00
9,100.0	6.00	279.00	9,072.8	5,511.8	81.8	-516.2	833,687.27	494,333.70	-32.75	0.00
Start Drop -3.00										
9,200.0	3.00	279.00	9,172.5	5,611.5	83.0	-524.0	833,679.52	494,334.93	-33.24	3.00
9,300.0	0.00	0.00	9,272.4	5,711.4	83.4	-526.6	833,676.94	494,335.34	-33.40	3.00
Start 45.0 hold at 9300.0 MD										
9,345.0	0.00	180.00	9,317.4	5,756.4	83.4	-526.6	833,676.94	494,335.34	-33.40	0.00
Start Build 11.20										
9,400.0	6.16	180.00	9,372.3	5,811.3	80.4	-526.6	833,676.94	494,332.38	-30.46	11.20
9,500.0	17.36	180.00	9,470.1	5,909.1	60.1	-526.6	833,676.94	494,312.04	-10.20	11.20
9,600.0	28.56	180.00	9,562.0	6,001.0	21.2	-526.6	833,676.94	494,273.09	28.57	11.20
9,700.0	39.76	180.00	9,644.6	6,083.6	-34.9	-526.6	833,676.94	494,217.04	84.37	11.20
9,800.0	50.96	180.00	9,714.8	6,153.8	-105.9	-526.6	833,676.94	494,146.00	155.09	11.20
9,900.0	62.15	180.00	9,769.8	6,208.8	-189.2	-526.6	833,676.94	494,062.69	238.03	11.20
9,918.2	64.19	180.00	9,778.0	6,217.0	-205.5	-526.6	833,676.94	494,046.48	254.17	11.20
1st Bone Spring Sand										
10,000.0	73.35	180.00	9,807.6	6,246.6	-281.7	-526.6	833,676.94	493,970.28	330.03	11.20
10,100.0	84.55	180.00	9,826.7	6,265.7	-379.6	-526.6	833,676.94	493,872.29	427.58	11.20
10,144.0	89.48	180.00	9,829.0	6,268.0	-423.6	-526.6	833,676.94	493,828.37	471.31	11.20
Start DLS 0.02 TFO -90.00										
10,200.0	89.48	179.99	9,829.5	6,268.5	-479.6	-526.5	833,676.95	493,772.37	527.06	0.02
10,300.0	89.48	179.96	9,830.4	6,269.4	-579.6	-526.5	833,676.99	493,672.37	626.61	0.02
10,400.0	89.48	179.94	9,831.3	6,270.3	-679.6	-526.4	833,677.07	493,572.38	726.15	0.02
10,500.0	89.48	179.92	9,832.3	6,271.3	-779.6	-526.3	833,677.20	493,472.38	825.69	0.02

Company:	Caza Operating LLC	Local Co-ordinate Reference:	Well Lennox 32 State 9H
Project:	Lennox 32 State 9H	TVD Reference:	WELL @ 3561.0usft (Original Well Elev)
Site:	Lennox 32 State 9H	MD Reference:	WELL @ 3561.0usft (Original Well Elev)
Well:	Lennox 32 State 9H	North Reference:	Grid
Wellbore:	Lennox 32 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	181029 Lennox 32 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)
10,600.0	89.48	179.89	9,833.2	6,272.2	-879.6	-526.1	833,677.37	493,372.39	925.22	0.02
10,700.0	89.48	179.87	9,834.1	6,273.1	-979.6	-525.9	833,677.58	493,272.39	1,024.76	0.02
10,800.0	89.48	179.85	9,835.0	6,274.0	-1,079.5	-525.7	833,677.82	493,172.39	1,124.28	0.02
10,900.0	89.48	179.82	9,835.9	6,274.9	-1,179.5	-525.4	833,678.12	493,072.40	1,223.81	0.02
11,000.0	89.48	179.80	9,836.8	6,275.8	-1,279.5	-525.0	833,678.45	492,972.40	1,323.32	0.02
11,100.0	89.48	179.77	9,837.7	6,276.7	-1,379.5	-524.7	833,678.82	492,872.41	1,422.84	0.02
11,200.0	89.48	179.75	9,838.6	6,277.6	-1,479.5	-524.3	833,679.23	492,772.41	1,522.35	0.02
11,300.0	89.48	179.73	9,839.5	6,278.5	-1,579.5	-523.8	833,679.69	492,672.42	1,621.86	0.02
11,400.0	89.48	179.70	9,840.4	6,279.4	-1,679.5	-523.3	833,680.18	492,572.42	1,721.36	0.02
11,500.0	89.48	179.68	9,841.3	6,280.3	-1,779.5	-522.8	833,680.72	492,472.43	1,820.86	0.02
11,600.0	89.48	179.66	9,842.2	6,281.2	-1,879.5	-522.2	833,681.30	492,372.43	1,920.35	0.02
11,700.0	89.48	179.63	9,843.1	6,282.1	-1,979.5	-521.6	833,681.92	492,272.44	2,019.84	0.02
11,800.0	89.48	179.61	9,844.1	6,283.1	-2,079.5	-520.9	833,682.58	492,172.45	2,119.33	0.02
11,900.0	89.48	179.59	9,845.0	6,284.0	-2,179.5	-520.2	833,683.28	492,072.45	2,218.81	0.02
12,000.0	89.48	179.56	9,845.9	6,284.9	-2,279.5	-519.5	833,684.03	491,972.46	2,318.29	0.02
12,100.0	89.48	179.54	9,846.8	6,285.8	-2,379.5	-518.7	833,684.81	491,872.47	2,417.76	0.02
12,200.0	89.48	179.52	9,847.7	6,286.7	-2,479.5	-517.9	833,685.64	491,772.48	2,517.23	0.02
12,300.0	89.48	179.49	9,848.6	6,287.6	-2,579.5	-517.0	833,686.50	491,672.48	2,616.70	0.02
12,400.0	89.48	179.47	9,849.5	6,288.5	-2,679.4	-516.1	833,687.41	491,572.49	2,716.16	0.02
12,500.0	89.48	179.44	9,850.4	6,289.4	-2,779.4	-515.1	833,688.36	491,472.50	2,815.62	0.02
12,600.0	89.48	179.42	9,851.3	6,290.3	-2,879.4	-514.1	833,689.35	491,372.51	2,915.07	0.02
12,700.0	89.48	179.40	9,852.2	6,291.2	-2,979.4	-513.1	833,690.38	491,272.52	3,014.52	0.02
12,800.0	89.48	179.37	9,853.1	6,292.1	-3,079.4	-512.0	833,691.45	491,172.53	3,113.96	0.02
12,900.0	89.48	179.35	9,854.0	6,293.0	-3,179.4	-510.9	833,692.56	491,072.54	3,213.40	0.02
13,000.0	89.48	179.33	9,854.9	6,293.9	-3,279.4	-509.8	833,693.72	490,972.55	3,312.84	0.02
13,100.0	89.48	179.30	9,855.8	6,294.8	-3,379.4	-508.6	833,694.91	490,872.56	3,412.27	0.02
13,200.0	89.48	179.28	9,856.8	6,295.8	-3,479.4	-507.3	833,696.15	490,772.57	3,511.70	0.02

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Site:	Lennox 32 State 9H	MD Reference:	WELL @ 3561.0usft (Original Well Elev)
Well:	Lennox 32 State 9H	North Reference:	Grid
Wellbore:	Lennox 32 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	181029 Lennox 32 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)
13,300.0	89.48	179.26	9,857.7	6,296.7	-3,579.4	-506.1	833,697.43	490,672.58	3,611.12	0.02
13,400.0	89.48	179.23	9,858.6	6,297.6	-3,679.3	-504.7	833,698.75	490,572.60	3,710.54	0.02
13,500.0	89.48	179.21	9,859.5	6,298.5	-3,779.3	-503.4	833,700.11	490,472.61	3,809.95	0.02
13,600.0	89.48	179.19	9,860.4	6,299.4	-3,879.3	-502.0	833,701.51	490,372.63	3,909.36	0.02
13,700.0	89.48	179.16	9,861.3	6,300.3	-3,979.3	-500.5	833,702.95	490,272.64	4,008.76	0.02
13,800.0	89.48	179.14	9,862.2	6,301.2	-4,079.3	-499.1	833,704.44	490,172.65	4,108.16	0.02
13,900.0	89.48	179.11	9,863.1	6,302.1	-4,179.3	-497.5	833,705.96	490,072.67	4,207.56	0.02
14,000.0	89.48	179.09	9,864.0	6,303.0	-4,279.3	-496.0	833,707.53	489,972.69	4,306.95	0.02
14,100.0	89.48	179.07	9,864.9	6,303.9	-4,379.2	-494.4	833,709.13	489,872.70	4,406.34	0.02
14,200.0	89.48	179.04	9,865.8	6,304.8	-4,479.2	-492.7	833,710.78	489,772.72	4,505.72	0.02
14,300.0	89.48	179.02	9,866.7	6,305.7	-4,579.2	-491.0	833,712.47	489,672.74	4,605.10	0.02
14,400.0	89.48	179.00	9,867.6	6,306.6	-4,679.2	-489.3	833,714.20	489,572.76	4,704.47	0.02
14,500.0	89.48	178.97	9,868.6	6,307.6	-4,779.2	-487.5	833,715.97	489,472.78	4,803.84	0.02
14,600.0	89.48	178.95	9,869.5	6,308.5	-4,879.1	-485.7	833,717.79	489,372.80	4,903.20	0.02
14,700.0	89.48	178.93	9,870.4	6,309.4	-4,979.1	-483.9	833,719.64	489,272.82	5,002.56	0.02
14,800.0	89.48	178.90	9,871.3	6,310.3	-5,079.1	-482.0	833,721.53	489,172.84	5,101.91	0.02
14,810.0	89.48	178.90	9,871.4	6,310.4	-5,089.1	-481.8	833,721.73	489,162.85	5,111.85	0.02

TD at 14810.0 - 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
1,978.0	1,978.0	13 3/8" Surface Casing	13-3/8	17-1/2
5,696.6	5,688.0	9 5/8" Intermediate Casing	9-5/8	12-1/4
14,810.0	9,871.4	5 1/2" Production Casing	5-1/2	8-3/4

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Well:	Lennox 32 State 9H	North Reference:	Grid
Wellbore:	Lennox 32 State 9H	Survey Calculation Method:	Minimum Curvature
Design:	181029 Lennox 32 State 9H	Database:	EDM 5000.1 Single User Db

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,123.1	4,123.0	Base of Salt		0.00	
9,918.2	9,778.0	1st Bone Spring Sand		0.00	
5,721.7	5,713.0	Delaware		0.00	
2,528.0	2,528.0	Top of Salt		0.00	
8,783.5	8,758.0	Bone Spring		0.00	
7,441.1	7,423.0	Brushy Canyon		0.00	
6,078.7	6,068.0	Cherry Canyon		0.00	
4,746.4	4,743.0	Capitan		0.00	
1,953.0	1,953.0	Ruslter		0.00	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,000.0	4,000.0	0.0	0.0	Start Build 3.00
4,200.0	4,199.6	1.6	-10.3	Start 4900.0 hold at 4200.0 MD
9,100.0	9,072.8	81.8	-516.2	Start Drop -3.00
9,300.0	9,272.4	83.4	-526.6	Start 45.0 hold at 9300.0 MD
9,345.0	9,317.4	83.4	-526.6	Start Build 11.20
10,144.0	9,829.0	-423.6	-526.6	Start DLS 0.02 TFO -90.00
14,810.0	9,871.4	-5,089.1	-481.8	TD at 14810.0

Checked By: _____	Approved By: _____	Date: _____
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