



September 8, 2016

Caza Petroleum, Inc.

200 N. Loraine, STE 1550

Midland, TX 79701

CATHEDRAL ENERGY SERVICES

The Trinity Building
Suite 300, 1801 Broadway Street
Denver, Colorado, United States
80202

303.825.1001 Office
877.825.1002 Toll-Free
303.825.1991 Fax

CathedralEnergyServices.com

Drilling + Completions

HOBBS OCD

DEC 05 2016

RECEIVED

Re: Certified Final Directional Survey

Dear Sir/ Madam,

Please find enclosed Cathedral Energy Services Certificate Final Survey for Caza Petroleum, Inc.

Rig: Nabors #893

Well: Igloo 19 State 3H

API # 30-025-42357

County: Lea County, NM

The data and calculations included in this survey have been reviewed and conform to the operational standards as outlined by the State of New Mexico EMNRD. Should you have any questions please do not hesitate to contact Cathedral Energy Services.

Sincerely,

Cathedral Energy Services

Amanda Tomlinson

Well Planner Print Name

Amanda Tomlinson 9.8.16
Well Planner Signature Date



Project: Lea County, NM (NAD27)
 Site: Sec. 19-20S-35E
 Well: Igloo 19 State 3H
 Wellbore: HZ
 Design: Plan #4 (09.01.16 AT)

SECTION DETAILS

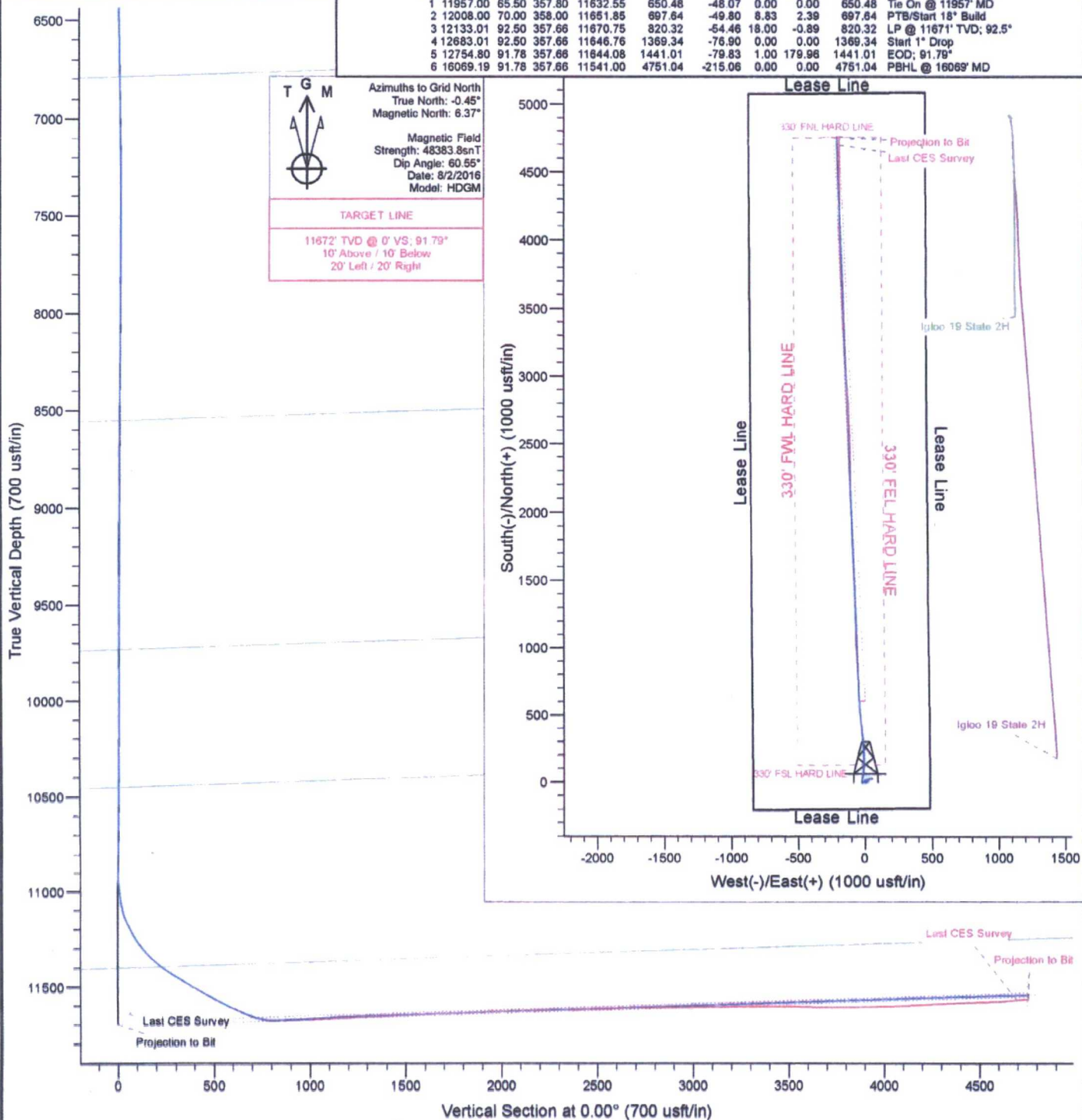
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	Annotation
1	11957.00	65.50	357.80	11632.55	650.48	-48.07	0.00	0.00	650.48	Tie On @ 11957' MD
2	12008.00	70.00	358.00	11651.85	697.64	-49.80	8.83	2.39	697.64	PTB/Start 18" Build
3	12133.01	92.50	357.66	11670.75	820.32	-54.46	18.00	-0.89	820.32	LP @ 11671' TVD; 92.5°
4	12683.01	92.50	357.66	11646.76	1369.34	-76.90	0.00	0.00	1369.34	Start 1" Drop
5	12754.80	91.78	357.66	11644.08	1441.01	-79.83	1.00	179.96	1441.01	EOD; 91.78°
6	16069.19	91.78	357.66	11541.00	4751.04	-215.06	0.00	0.00	4751.04	PBHL @ 16069' MD



Azimuths to Grid North
 True North: -0.45°
 Magnetic North: 6.37°
 Magnetic Field
 Strength: 48383.8nT
 Dip Angle: 60.55°
 Date: 8/2/2016
 Model: HDGM

TARGET LINE

11672' TVD @ 0° VS; 91.79°
 10' Above / 10' Below
 20' Left / 20' Right



CATHEDRAL

WELL DETAILS: Igloo 19 State 3H

+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude
0.00	0.00	565479.87	758809.98	32.551806	-103.493392

CASING SHOES:

TVD	MD	Name	Size
1800.00	1800.53	13-3/8" Surface Casing	13-3/8
5650.00	5652.37	9-5/8" Intermediate Casing	9-5/8



Cathedral Energy Services

Survey Report

Company: Caza Operating, LLC
Project: Lea County, NM (NAD27)
Site: Sec. 19-20S-35E
Well: Igloo 19 State 3H
Wellbore: HZ
Design: FINAL

Local Co-ordinate Reference: Well Igloo 19 State 3H
TVD Reference: 27' RKB @ 3720.00usft
MD Reference: 27' RKB @ 3720.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA EDM 5000 Multi Users DB

Project	Lea County, NM (NAD27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Sec. 19-20S-35E				
Site Position:		Northing:	570,377.88 usft	Latitude:	32.585245
From:	Map	Easting:	759,908.24 usft	Longitude:	-103.489702
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.45 °

Well	Igloo 19 State 3H					
Well Position	+N/-S	0.00 usft	Northing:	565,479.87 usft	Latitude:	32.551806
	+E/-W	0.00 usft	Easting:	758,809.98 usft	Longitude:	-103.493392
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,693.00 usft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/2/2016	6.82	60.55	48,384

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	357.41	

Survey Program	Date 9/5/2016				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
187.00	10,900.00	CES Pilot Hole MWD (HZ)	MWD+HDGM	OWSG MWD + HDGM	
11,009.00	16,075.00	CES MWD C/L (HZ)	MWD+HDGM	OWSG MWD + HDGM	

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Formations / Comments
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
187.00	0.30	107.60	187.00	-0.15	0.47	-0.17	0.16	0.16	
251.00	0.40	83.80	251.00	-0.17	0.85	-0.21	0.27	0.16	
374.00	0.50	118.80	373.99	-0.39	1.75	-0.47	0.23	0.08	
496.00	0.60	78.10	495.99	-0.51	2.84	-0.64	0.32	0.08	
591.00	0.70	73.10	590.98	-0.24	3.88	-0.42	0.12	0.11	
652.00	1.10	72.70	651.98	0.04	4.79	-0.17	0.66	0.66	
744.00	1.20	85.90	743.96	0.37	6.60	0.07	0.31	0.11	
836.00	0.60	85.20	835.95	0.48	8.04	0.12	0.65	-0.65	
928.00	0.30	130.70	927.94	0.37	8.70	-0.03	0.48	-0.33	
1,021.00	0.60	97.20	1,020.94	0.15	9.37	-0.28	0.42	0.32	
1,112.00	0.70	38.40	1,111.93	0.52	10.19	0.06	0.71	0.11	



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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA EDM 5000 Multi Users DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Formations / Comments
1,204.00	1.80	26.10	1,203.91	2.26	11.17	1.75	1.22	1.20	
1,299.00	2.50	29.20	1,298.84	5.41	12.84	4.82	0.75	0.74	
1,394.00	3.10	24.60	1,393.73	9.55	14.92	8.87	0.67	0.63	
1,488.00	2.50	29.70	1,487.62	13.64	16.99	12.86	0.69	-0.64	
1,583.00	1.50	43.20	1,582.56	16.35	18.87	15.48	1.16	-1.05	
1,678.00	1.30	58.20	1,677.53	17.83	20.64	16.87	0.44	-0.21	
1,772.00	1.90	67.20	1,771.49	18.99	22.98	17.93	0.69	0.64	
1,867.00	3.50	56.90	1,866.39	21.19	26.86	19.95	1.75	1.68	
1,970.00	5.50	52.30	1,969.06	25.92	33.40	24.38	1.97	1.94	
2,063.00	3.10	57.20	2,061.80	30.01	39.04	28.21	2.61	-2.58	
2,158.00	1.80	100.20	2,156.71	31.14	42.67	29.17	2.28	-1.37	
2,252.00	1.90	97.80	2,250.67	30.66	45.67	28.57	0.13	0.11	
2,347.00	1.10	118.60	2,345.63	30.01	48.03	27.81	1.01	-0.84	
2,442.00	1.20	122.80	2,440.61	29.04	49.67	26.76	0.14	0.11	
2,537.00	0.60	147.60	2,535.60	28.08	50.77	25.75	0.74	-0.63	
2,633.00	0.40	148.40	2,631.60	27.37	51.21	25.02	0.21	-0.21	
2,727.00	0.70	136.40	2,725.59	26.67	51.78	24.30	0.34	0.32	
2,822.00	0.80	133.50	2,820.59	25.80	52.66	23.39	0.11	0.11	
2,917.00	0.40	228.60	2,915.58	25.12	52.90	22.70	0.97	-0.42	
3,012.00	1.50	280.20	3,010.57	25.12	51.42	22.77	1.36	1.16	
3,107.00	1.50	285.20	3,105.54	25.67	49.00	23.43	0.14	0.00	
3,201.00	1.50	294.10	3,199.50	26.49	46.69	24.35	0.25	0.00	
3,296.00	1.50	294.70	3,294.47	27.52	44.42	25.48	0.02	0.00	
3,390.00	1.30	296.80	3,388.44	28.52	42.35	26.57	0.22	-0.21	
3,485.00	1.30	304.10	3,483.42	29.61	40.50	27.74	0.17	0.00	
3,579.00	1.40	284.20	3,577.39	30.49	38.50	28.71	0.51	0.11	
3,673.00	2.10	280.10	3,671.35	31.07	35.70	29.42	0.76	0.74	
3,768.00	1.80	259.30	3,766.29	31.10	32.52	29.59	0.80	-0.32	
3,862.00	2.00	255.40	3,860.24	30.41	29.48	29.05	0.25	0.21	
3,957.00	1.80	249.60	3,955.19	29.47	26.48	28.24	0.29	-0.21	
4,052.00	2.00	243.10	4,050.14	28.20	23.60	27.11	0.31	0.21	
4,146.00	2.10	238.90	4,144.08	26.57	20.66	25.61	0.19	0.11	
4,241.00	2.60	241.50	4,239.00	24.64	17.28	23.84	0.54	0.53	
4,336.00	1.70	242.10	4,333.93	22.96	14.14	22.29	0.95	-0.95	
4,430.00	1.60	236.60	4,427.89	21.58	11.81	21.02	0.20	-0.11	
4,525.00	1.70	232.30	4,522.85	19.99	9.59	19.53	0.17	0.11	
4,620.00	1.70	230.40	4,617.81	18.23	7.39	17.88	0.06	0.00	
4,715.00	0.90	206.90	4,712.79	16.67	5.96	16.38	1.00	-0.84	
4,903.00	1.10	209.70	4,900.76	13.78	4.40	13.57	0.11	0.11	
5,093.00	1.20	200.00	5,090.72	10.33	2.82	10.19	0.11	0.05	
5,282.00	1.10	199.90	5,279.68	6.76	1.52	6.69	0.05	-0.05	
5,471.00	1.10	222.50	5,468.65	3.72	-0.32	3.73	0.23	0.00	
5,620.00	0.70	226.40	5,617.63	2.04	-1.95	2.12	0.27	-0.27	
5,732.00	0.90	233.20	5,729.62	1.04	-3.15	1.18	0.20	0.18	
5,827.00	1.00	247.10	5,824.60	0.27	-4.51	0.47	0.26	0.11	
5,922.00	0.90	259.80	5,919.59	-0.19	-6.00	0.09	0.24	-0.11	
6,017.00	0.80	321.30	6,014.58	0.20	-7.15	0.52	0.92	-0.11	
6,112.00	1.10	334.10	6,109.57	1.54	-7.97	1.90	0.38	0.32	
6,207.00	0.80	15.60	6,204.56	3.00	-8.19	3.36	0.77	-0.32	
6,302.00	1.10	23.50	6,299.54	4.47	-7.64	4.81	0.34	0.32	
6,397.00	1.10	22.00	6,394.53	6.15	-6.94	6.46	0.03	0.00	
6,491.00	1.00	26.60	6,488.51	7.72	-6.23	8.00	0.14	-0.11	
6,586.00	1.00	21.10	6,583.50	9.24	-5.56	9.48	0.10	0.00	



Cathedral Energy Services

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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Formations / Comments
6,681.00	0.90	4.00	6,678.48	10.75	-5.21	10.98	0.32	-0.11	
6,775.00	0.90	3.70	6,772.47	12.23	-5.11	12.45	0.01	0.00	
6,870.00	1.00	347.60	6,867.46	13.78	-5.24	14.01	0.30	0.11	
6,964.00	1.00	0.50	6,961.44	15.40	-5.41	15.63	0.24	0.00	
7,060.00	0.90	334.10	7,057.43	16.92	-5.74	17.16	0.46	-0.10	
7,154.00	0.80	333.30	7,151.42	18.17	-6.35	18.44	0.11	-0.11	
7,249.00	0.80	319.80	7,246.41	19.27	-7.08	19.57	0.20	0.00	
7,343.00	0.80	98.70	7,340.41	19.67	-6.86	19.96	1.59	0.00	
7,438.00	1.00	110.90	7,435.40	19.27	-5.43	19.50	0.29	0.21	
7,531.00	0.80	115.10	7,528.39	18.71	-4.08	18.87	0.23	-0.22	
7,626.00	0.70	96.90	7,623.38	18.36	-2.90	18.47	0.27	-0.11	
7,721.00	0.70	115.20	7,718.37	18.04	-1.80	18.10	0.23	0.00	
7,816.00	0.40	137.20	7,813.37	17.55	-1.05	17.58	0.38	-0.32	
7,911.00	0.40	170.60	7,908.36	16.98	-0.77	17.00	0.24	0.00	
8,006.00	0.80	163.80	8,003.36	16.01	-0.53	16.02	0.43	0.42	
8,101.00	0.40	168.60	8,098.35	15.05	-0.28	15.05	0.42	-0.42	
8,196.00	0.50	173.70	8,193.35	14.32	-0.17	14.31	0.11	0.11	
8,290.00	0.50	168.40	8,287.35	13.51	-0.04	13.49	0.05	0.00	
8,385.00	0.70	177.00	8,382.34	12.52	0.07	12.50	0.23	0.21	
8,480.00	0.30	180.10	8,477.34	11.69	0.10	11.68	0.42	-0.42	
8,574.00	0.90	210.50	8,571.33	10.81	-0.28	10.81	0.70	0.64	
8,669.00	0.60	220.60	8,666.32	9.79	-0.98	9.82	0.34	-0.32	
8,788.00	0.90	245.40	8,785.31	8.93	-2.23	9.02	0.37	0.25	
8,883.00	0.90	267.10	8,880.30	8.58	-3.66	8.74	0.36	0.00	
8,976.00	1.10	273.90	8,973.29	8.60	-5.28	8.83	0.25	0.22	
9,071.00	1.00	259.60	9,068.27	8.51	-7.00	8.82	0.29	-0.11	
9,166.00	1.20	265.20	9,163.26	8.28	-8.81	8.67	0.24	0.21	
9,259.00	1.50	267.50	9,256.23	8.15	-11.00	8.64	0.33	0.32	
9,354.00	0.50	150.20	9,351.22	7.73	-12.03	8.27	1.88	-1.05	
9,449.00	0.40	220.10	9,446.22	7.12	-12.04	7.66	0.55	-0.11	
9,543.00	0.40	228.80	9,540.21	6.65	-12.50	7.21	0.06	0.00	
9,637.00	0.70	250.60	9,634.21	6.25	-13.29	6.84	0.38	0.32	
9,732.00	0.60	231.50	9,729.20	5.74	-14.22	6.38	0.25	-0.11	
9,827.00	1.00	282.20	9,824.20	5.61	-15.42	6.30	0.82	0.42	
9,952.00	0.90	281.10	9,949.18	6.03	-17.45	6.81	0.08	-0.08	
10,047.00	1.20	273.70	10,044.16	6.24	-19.18	7.10	0.35	0.32	
10,142.00	1.10	251.40	10,139.14	6.01	-21.03	6.96	0.48	-0.11	
10,237.00	0.40	234.40	10,234.13	5.53	-22.17	6.52	0.77	-0.74	
10,331.00	0.60	179.50	10,328.13	4.84	-22.43	5.85	0.53	0.21	
10,426.00	1.10	190.80	10,423.12	3.45	-22.60	4.47	0.55	0.53	
10,521.00	1.10	208.60	10,518.10	1.75	-23.20	2.80	0.36	0.00	
10,616.00	1.00	177.80	10,613.09	0.12	-23.61	1.19	0.60	-0.11	
10,710.00	1.10	195.00	10,707.07	-1.57	-23.81	-0.49	0.35	0.11	
10,805.00	0.40	195.70	10,802.06	-2.77	-24.14	-1.67	0.74	-0.74	
10,900.00	0.70	222.10	10,897.06	-3.52	-24.62	-2.40	0.41	0.32	
11,009.00	9.80	343.60	11,005.55	4.91	-27.69	6.16	9.34	8.35	
11,057.00	8.90	7.60	11,052.93	12.51	-28.35	13.78	8.27	-1.87	
11,099.00	14.20	14.80	11,094.06	20.72	-26.60	21.90	13.05	12.62	
11,150.00	22.40	11.70	11,142.44	36.31	-23.03	37.31	16.19	16.08	
11,198.00	27.40	8.60	11,185.97	56.20	-19.52	57.03	10.76	10.42	
11,246.00	31.50	6.50	11,227.76	79.59	-16.45	80.25	8.81	8.54	
11,293.00	35.30	4.30	11,266.99	105.34	-14.04	105.87	8.48	8.09	
11,341.00	41.50	1.70	11,304.59	135.10	-12.53	135.53	13.35	12.92	



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11,388.00	44.60	359.90	11,338.94	167.17	-12.09	167.55	7.09	6.60	
11,436.00	49.10	358.10	11,371.76	202.17	-12.72	202.54	9.77	9.37	
11,483.00	54.20	356.40	11,400.91	238.98	-14.51	239.39	11.22	10.85	
11,531.00	58.80	355.40	11,427.40	278.89	-17.38	279.39	9.74	9.58	
11,577.00	59.30	355.30	11,451.05	318.21	-20.58	318.81	1.10	1.09	
11,625.00	58.70	354.30	11,475.78	359.18	-24.31	359.91	2.18	-1.25	
11,672.00	59.00	353.80	11,500.09	399.19	-28.48	400.07	1.11	0.64	
11,720.00	60.00	353.90	11,524.45	440.31	-32.91	441.35	2.09	2.08	
11,767.00	60.70	354.20	11,547.70	480.93	-37.14	482.12	1.59	1.49	
11,815.00	62.40	355.00	11,570.57	522.95	-41.11	524.27	3.83	3.54	
11,862.00	63.40	357.10	11,591.98	564.68	-43.99	566.10	4.51	2.13	
11,910.00	65.00	357.10	11,612.87	607.84	-46.18	609.31	3.33	3.33	
11,957.00	65.50	357.80	11,632.55	650.48	-48.07	651.99	1.72	1.06	
11,989.00	68.00	357.90	11,645.18	679.86	-49.18	681.39	7.82	7.81	
12,004.00	68.80	357.50	11,650.58	693.84	-49.74	695.38	12.26	12.00	
12,019.00	72.10	357.20	11,655.47	708.01	-50.39	709.56	15.45	15.33	
12,035.00	74.70	356.60	11,660.04	723.32	-51.22	724.89	16.64	16.25	
12,050.00	76.70	355.80	11,663.75	737.82	-52.19	739.42	14.30	13.33	
12,066.00	79.10	355.60	11,667.10	753.42	-53.36	755.06	15.05	15.00	
12,083.00	82.10	356.40	11,669.88	770.15	-54.53	771.82	18.25	17.65	
12,141.00	90.50	356.40	11,673.62	827.86	-58.16	829.64	14.48	14.48	
12,236.00	92.00	356.60	11,671.55	922.66	-63.96	924.61	1.59	1.58	
12,330.00	92.50	359.30	11,667.85	1,016.52	-67.32	1,018.52	2.92	0.53	
12,425.00	93.30	359.20	11,663.05	1,111.38	-68.56	1,113.35	0.85	0.84	
12,520.00	92.00	357.80	11,658.66	1,206.25	-71.05	1,208.23	2.01	-1.37	
12,614.00	92.80	357.90	11,654.72	1,300.10	-74.57	1,302.14	0.86	0.85	
12,709.00	93.40	357.70	11,649.58	1,394.89	-78.21	1,397.00	0.67	0.63	
12,804.00	91.70	357.50	11,645.36	1,489.71	-82.19	1,491.90	1.80	-1.79	
12,898.00	92.10	357.20	11,642.24	1,583.55	-86.53	1,585.85	0.53	0.43	
12,993.00	93.00	357.00	11,638.01	1,678.34	-91.33	1,680.75	0.97	0.95	
13,088.00	91.90	357.90	11,633.95	1,773.15	-95.55	1,775.66	1.50	-1.16	
13,183.00	92.10	357.70	11,630.64	1,868.03	-99.20	1,870.60	0.30	0.21	
13,277.00	92.60	357.50	11,626.78	1,961.86	-103.13	1,964.52	0.57	0.53	
13,372.00	92.40	358.00	11,622.64	2,056.70	-106.86	2,059.43	0.57	-0.21	
13,467.00	92.00	359.30	11,618.99	2,151.60	-109.09	2,154.33	1.43	-0.42	
13,562.00	89.80	359.70	11,617.50	2,246.58	-109.92	2,249.25	2.35	-2.32	
13,656.00	90.40	358.90	11,617.33	2,340.57	-111.07	2,343.20	1.06	0.64	
13,751.00	91.50	358.80	11,615.76	2,435.54	-112.98	2,438.16	1.16	1.16	
13,846.00	92.30	358.50	11,612.61	2,530.46	-115.21	2,533.08	0.90	0.84	
13,941.00	91.60	357.80	11,609.38	2,625.35	-118.28	2,628.02	1.04	-0.74	
14,035.00	92.20	357.10	11,606.26	2,719.21	-122.46	2,721.96	0.98	0.64	
14,130.00	89.50	355.90	11,604.85	2,814.01	-128.26	2,816.93	3.11	-2.84	
14,225.00	89.40	355.70	11,605.76	2,908.75	-135.21	2,911.89	0.24	-0.11	
14,320.00	90.40	355.80	11,605.93	3,003.49	-142.25	3,006.85	1.06	1.05	
14,414.00	90.40	355.80	11,605.27	3,097.23	-149.14	3,100.81	0.00	0.00	
14,509.00	91.30	356.10	11,603.86	3,191.98	-155.85	3,195.77	1.00	0.95	
14,604.00	89.70	357.30	11,603.03	3,286.82	-161.31	3,290.75	2.11	-1.68	
14,698.00	89.90	357.80	11,603.36	3,380.73	-165.33	3,384.75	0.57	0.21	
14,793.00	90.80	358.80	11,602.78	3,475.69	-168.15	3,479.73	1.42	0.95	
14,887.00	88.60	357.40	11,603.27	3,569.62	-171.27	3,573.72	2.77	-2.34	
14,982.00	88.00	357.10	11,606.09	3,664.47	-175.82	3,668.67	0.71	-0.63	
15,077.00	90.10	357.70	11,607.67	3,759.36	-180.13	3,763.66	2.30	2.21	
15,172.00	91.10	357.90	11,606.67	3,854.28	-183.78	3,858.65	1.07	1.05	



Cathedral Energy Services

Survey Report

Company: Caza Operating, LLC
Project: Lea County, NM (NAD27)
Site: Sec. 19-20S-35E
Well: Igloo 19 State 3H
Wellbore: HZ
Design: FINAL

Local Co-ordinate Reference: Well Igloo 19 State 3H
TVD Reference: 27' RKB @ 3720.00usft
MD Reference: 27' RKB @ 3720.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA EDM 5000 Multi Users DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Formations / Comments
15,266.00	92.10	358.00	11,604.05	3,948.18	-187.14	3,952.61	1.07	1.06	
15,361.00	91.10	358.40	11,601.40	4,043.10	-190.12	4,047.56	1.13	-1.05	
15,456.00	92.30	358.40	11,598.58	4,138.02	-192.77	4,142.50	1.26	1.26	
15,551.00	93.50	358.70	11,593.77	4,232.86	-195.17	4,237.36	1.30	1.26	
15,645.00	93.40	0.10	11,588.11	4,326.68	-196.16	4,331.13	1.49	-0.11	
15,739.00	92.10	0.30	11,583.60	4,420.57	-195.83	4,424.91	1.40	-1.38	
15,834.00	91.50	0.70	11,580.62	4,515.52	-195.00	4,519.72	0.76	-0.63	
15,928.00	93.20	0.50	11,576.77	4,609.43	-194.02	4,613.49	1.82	1.81	
16,015.00	94.50	0.30	11,570.92	4,696.23	-193.41	4,700.18	1.51	1.49	Last CES Survey
16,071.87	94.50	0.30	11,566.46	4,752.93	-193.11	4,756.80	0.00	0.00	3H PBHL P3
16,075.00	94.50	0.30	11,566.22	4,756.05	-193.10	4,759.91	0.00	0.00	Projection to Bit

Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
3H PBHL P3	88.21	357.34	11,541.00	4,751.04	-215.06	570,230.91	758,594.92	32.564869	-103.493968
- actual wellpath misses target center by 33.67usft at 16071.87usft MD (11566.46 TVD, 4752.93 N, -193.11 E)									
- Rectangle (sides W20.00 H40.00 D4,156.00)									
3H PBHL 1	86.52	357.34	11,201.00	4,751.04	-215.06	570,230.91	758,594.92	32.564869	-103.493968
- actual wellpath misses target center by 365.91usft at 16075.00usft MD (11566.22 TVD, 4756.05 N, -193.10 E)									
- Rectangle (sides W20.00 H40.00 D4,156.00)									
3H PBHL P2	86.52	357.34	11,385.77	4,751.04	-215.06	570,230.91	758,594.92	32.564869	-103.493968
- actual wellpath misses target center by 181.85usft at 16075.00usft MD (11566.22 TVD, 4756.05 N, -193.10 E)									
- Rectangle (sides W20.00 H40.00 D4,156.00)									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
16,015.00	11,570.92	4,696.23	-193.41	Last CES Survey
16,075.00	11,566.22	4,756.05	-193.10	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____