

30-025-43906

Chisholm Energy Holdings, LLC

Lea County, NM (NAD83)

Sec 32-T18S-R33E

Gazelle 32 State 2BS 1H

Wellbore #1

Design: Wellbore #1

Standard Survey Report

27 November, 2017

HCDE3 OCD

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directional survey

Survey Report

Company:	Chisholm Energy Holdings, LLC	Local Co-ordinate Reference:	Well Gazelle 32 State 2BS 1H
Project:	Lea County, NM (NAD83)	TVD Reference:	KB=27 @ 3786.00ft (Latshaw 7)
Site:	Sec 32-T18S-R33E	MD Reference:	KB=27 @ 3786.00ft (Latshaw 7)
Well:	Gazelle 32 State 2BS 1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Project	Lea County, NM (NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Sec 32-T18S-R33E			
Site Position:		Northing:	617,766.0000 usft	Latitude: 32.696651
From: Map		Easting:	738,075.5000 usft	Longitude: -103.693793
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence: 0.35 °

Well	Gazelle 32 State 2BS 1H, WA			
Well Position	+N/-S 0.00 ft	Northing:	622,860.6000 usft	Latitude: 32.710632
	+E/-W 0.00 ft	Easting:	739,346.6000 usft	Longitude: -103.689561
Position Uncertainty	0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level: 3,759.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/1/2017	6.93	60.73	48,390

Design	Wellbore #1				
Audit Notes:					
Version: 1.0	Phase:	ACTUAL		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	180.00	

Survey Program	Date 11/27/2017			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
151.00	14,646.00	IDS MWD Surveys (Wellbore #1)	MWD	MWD - Standard

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
151.00	0.50	203.70	151.00	-0.60	-0.26	0.60	0.33	0.33	0.00
First IDS MWD Survey									
242.00	0.20	238.40	242.00	-1.05	-0.56	1.05	0.39	-0.33	38.13
333.00	0.40	267.60	333.00	-1.15	-1.01	1.15	0.27	0.22	32.09
424.00	0.50	328.00	423.99	-0.82	-1.54	0.82	0.51	0.11	66.37
514.00	0.60	327.60	513.99	-0.09	-2.00	0.09	0.11	0.11	-0.44
605.00	0.70	302.00	604.98	0.60	-2.73	-0.60	0.33	0.11	-28.13
696.00	0.80	298.70	695.98	1.20	-3.76	-1.20	0.12	0.11	-3.63
788.00	1.20	286.80	787.96	1.79	-5.24	-1.79	0.49	0.43	-12.93
970.00	1.10	283.80	969.92	2.76	-8.76	-2.76	0.06	-0.05	-1.65

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Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,155.00	1.30	279.00	1,154.88	3.51	-12.56	-3.51	0.12	0.11	-2.59
1,339.00	1.90	277.60	1,338.81	4.24	-17.64	-4.24	0.33	0.33	-0.76
1,474.00	1.60	268.30	1,473.75	4.48	-21.75	-4.48	0.31	-0.22	-6.89
1,618.00	1.30	257.80	1,617.70	4.08	-25.35	-4.08	0.28	-0.21	-7.29
1,806.00	1.60	255.70	1,805.64	2.98	-29.98	-2.98	0.16	0.16	-1.12
1,995.00	0.40	260.30	1,994.61	2.21	-33.19	-2.21	0.64	-0.63	2.43
2,182.00	0.20	359.90	2,181.61	2.43	-33.83	-2.43	0.25	-0.11	53.26
2,371.00	0.40	56.90	2,370.61	3.12	-33.28	-3.12	0.18	0.11	30.16
2,559.00	0.50	41.80	2,558.60	4.09	-32.18	-4.09	0.08	0.05	-8.03
2,747.00	0.70	38.10	2,746.59	5.61	-30.93	-5.61	0.11	0.11	-1.97
2,936.00	0.40	31.50	2,935.58	7.08	-29.87	-7.08	0.16	-0.16	-3.49
3,125.00	0.30	18.90	3,124.58	8.11	-29.37	-8.11	0.07	-0.05	-6.67
3,314.00	0.20	356.00	3,313.58	8.90	-29.23	-8.90	0.07	-0.05	-12.12
3,502.00	0.40	21.20	3,501.57	9.84	-29.01	-9.84	0.13	0.11	13.40
3,691.00	0.40	62.00	3,690.57	10.77	-28.19	-10.77	0.15	0.00	21.59
3,880.00	0.70	24.60	3,879.56	12.13	-27.13	-12.13	0.24	0.16	-19.79
4,069.00	0.90	22.60	4,068.54	14.55	-26.08	-14.55	0.11	0.11	-1.06
4,258.00	1.00	11.00	4,257.52	17.54	-25.19	-17.54	0.11	0.05	-6.14
4,454.00	1.10	10.50	4,453.48	21.07	-24.53	-21.07	0.05	0.05	-0.26
4,643.00	1.00	4.70	4,642.45	24.49	-24.06	-24.49	0.08	-0.05	-3.07
4,831.00	0.20	294.00	4,830.44	26.26	-24.22	-26.26	0.51	-0.43	-37.61
5,020.00	0.40	280.20	5,019.44	26.51	-25.18	-26.51	0.11	0.11	-7.30
5,207.00	0.70	309.50	5,206.43	27.36	-26.70	-27.36	0.21	0.16	15.67
5,396.00	1.50	304.10	5,395.39	29.48	-29.64	-29.48	0.43	0.42	-2.86
5,584.00	1.70	300.70	5,583.32	32.28	-34.07	-32.28	0.12	0.11	-1.81
5,747.00	1.70	296.30	5,746.25	34.59	-38.32	-34.59	0.08	0.00	-2.70
5,976.00	0.70	308.70	5,975.20	36.96	-42.46	-36.96	0.45	-0.44	5.41
6,164.00	1.00	311.10	6,163.17	38.76	-44.59	-38.76	0.16	0.16	1.28
6,353.00	1.10	307.30	6,352.14	40.94	-47.28	-40.94	0.06	0.05	-2.01
6,541.00	1.20	304.60	6,540.10	43.16	-50.33	-43.16	0.06	0.05	-1.44
6,729.00	1.50	301.30	6,728.05	45.55	-54.05	-45.55	0.16	0.16	-1.76
6,918.00	1.50	306.00	6,916.99	48.29	-58.17	-48.29	0.07	0.00	2.49
7,107.00	1.70	306.60	7,105.91	51.42	-62.42	-51.42	0.11	0.11	0.32
7,294.00	0.70	325.20	7,292.87	54.01	-65.30	-54.01	0.57	-0.53	9.95
7,482.00	1.00	313.30	7,480.85	56.08	-67.15	-56.08	0.18	0.16	-6.33
7,670.00	1.00	313.50	7,668.82	58.33	-69.53	-58.33	0.00	0.00	0.11
7,857.00	0.40	325.60	7,855.81	59.99	-71.09	-59.99	0.33	-0.32	6.47
8,043.00	0.70	13.00	8,041.80	61.64	-71.20	-61.64	0.28	0.16	25.48
8,230.00	0.70	341.40	8,228.79	63.83	-71.30	-63.83	0.20	0.00	-16.90
8,418.00	1.00	286.30	8,416.77	65.38	-73.25	-65.38	0.44	0.16	-29.31
8,605.00	1.70	281.50	8,603.71	66.39	-77.53	-66.39	0.38	0.37	-2.57
8,793.00	2.00	282.10	8,791.62	67.64	-83.47	-67.64	0.16	0.16	0.32
8,953.00	2.10	283.20	8,951.51	68.89	-89.05	-68.89	0.07	0.06	0.69

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9,017.00	2.00	297.00	9,015.47	69.66	-91.19	-69.66	0.78	-0.16	21.56
9,057.00	2.10	296.00	9,055.45	70.30	-92.47	-70.30	0.27	0.25	-2.50
9,088.00	5.70	276.00	9,086.37	70.71	-94.51	-70.71	12.24	11.61	-64.52
9,120.00	10.20	271.80	9,118.06	70.97	-98.93	-70.97	14.17	14.06	-13.13
9,152.00	14.00	272.48	9,149.34	71.22	-105.63	-71.22	11.88	11.88	2.13
9,183.00	18.50	273.08	9,179.09	71.65	-114.29	-71.65	14.53	14.52	1.94
9,214.00	22.90	267.18	9,208.09	71.62	-125.23	-71.62	15.69	14.19	-19.03
9,246.00	27.40	266.88	9,237.05	70.91	-138.81	-70.91	14.07	14.06	-0.94
9,277.00	32.20	268.18	9,263.94	70.26	-154.20	-70.26	15.62	15.48	4.19
9,308.00	36.50	270.18	9,289.53	70.03	-171.68	-70.03	14.34	13.87	6.45
9,340.00	39.10	271.38	9,314.81	70.30	-191.29	-70.30	8.44	8.13	3.75
9,371.00	42.10	272.28	9,338.35	70.95	-211.45	-70.95	9.86	9.68	2.90
9,402.00	45.00	272.38	9,360.81	71.82	-232.79	-71.82	9.36	9.35	0.32
9,434.00	48.70	271.78	9,382.69	72.66	-256.12	-72.66	11.64	11.56	-1.88
9,465.00	50.30	270.58	9,402.83	73.14	-279.68	-73.14	5.94	5.16	-3.87
9,496.00	54.20	268.08	9,421.80	72.84	-304.18	-72.84	14.10	12.58	-8.06
9,527.00	57.70	266.68	9,439.16	71.66	-329.84	-71.66	11.89	11.29	-4.52
9,559.00	58.50	266.18	9,456.07	69.97	-356.95	-69.97	2.83	2.50	-1.56
9,590.00	58.90	262.38	9,472.18	67.33	-383.30	-67.33	10.55	1.29	-12.26
9,621.00	59.80	258.58	9,487.99	62.92	-409.59	-62.92	10.94	2.90	-12.26
9,653.00	61.10	253.98	9,503.77	56.31	-436.62	-56.31	13.15	4.06	-14.38
9,684.00	61.90	249.28	9,518.57	47.72	-462.47	-47.72	13.57	2.58	-15.16
9,716.00	62.70	246.38	9,533.45	37.03	-488.70	-37.03	8.40	2.50	-9.06
9,747.00	63.50	242.38	9,547.48	25.08	-513.62	-25.08	11.79	2.58	-12.90
9,778.00	65.20	238.18	9,560.90	11.22	-537.88	-11.22	13.39	5.48	-13.55
9,810.00	66.20	235.28	9,574.07	-4.78	-562.25	4.78	8.83	3.13	-9.06
9,841.00	67.60	231.78	9,586.24	-21.73	-585.18	21.73	11.32	4.52	-11.29
9,872.00	68.70	227.68	9,597.78	-40.32	-607.12	40.32	12.78	3.55	-13.23
9,904.00	69.20	224.18	9,609.28	-61.09	-628.57	61.09	10.33	1.56	-10.94
9,935.00	70.20	219.18	9,620.04	-82.80	-647.90	82.80	15.47	3.23	-16.13
9,965.00	71.10	214.78	9,629.98	-105.41	-664.92	105.41	14.16	3.00	-14.67
9,996.00	71.60	211.38	9,639.90	-130.01	-680.94	130.01	10.52	1.61	-10.97
10,027.00	72.40	206.98	9,649.48	-155.75	-695.31	155.75	13.74	2.58	-14.19
10,059.00	73.60	203.28	9,658.84	-183.45	-708.30	183.45	11.68	3.75	-11.56
10,089.00	74.60	200.38	9,667.06	-210.23	-719.03	210.23	9.88	3.33	-9.67
10,121.00	76.10	196.58	9,675.16	-239.59	-728.84	239.59	12.41	4.69	-11.88
10,152.00	78.00	192.88	9,682.11	-268.80	-736.51	268.80	13.15	6.13	-11.94
10,183.00	79.60	189.98	9,688.13	-298.60	-742.53	298.60	10.53	5.16	-9.35
10,233.00	84.00	185.38	9,695.26	-347.62	-749.13	347.62	12.66	8.80	-9.20
10,264.00	85.90	180.38	9,697.99	-378.45	-750.68	378.45	17.20	6.13	-16.13
10,296.00	86.00	178.78	9,700.25	-410.37	-750.45	410.37	5.00	0.31	-5.00
10,327.00	85.40	178.28	9,702.58	-441.27	-749.66	441.27	2.52	-1.94	-1.61
10,421.00	86.80	181.68	9,708.97	-535.04	-749.63	535.04	3.90	1.49	3.62

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10,515.00	87.80	181.48	9,713.40	-628.90	-752.21	628.90	1.08	1.06	-0.21
10,609.00	87.50	181.68	9,717.25	-722.78	-754.80	722.78	0.38	-0.32	0.21
10,703.00	87.00	182.18	9,721.76	-816.62	-757.97	816.62	0.75	-0.53	0.53
10,798.00	88.30	182.18	9,725.66	-911.47	-761.58	911.47	1.37	1.37	0.00
10,892.00	88.30	181.68	9,728.45	-1,005.38	-764.74	1,005.38	0.53	0.00	-0.53
10,987.00	91.00	180.78	9,729.03	-1,100.34	-766.78	1,100.34	3.00	2.84	-0.95
11,080.00	89.40	180.08	9,728.70	-1,193.33	-767.48	1,193.33	1.88	-1.72	-0.75
11,174.00	88.50	180.48	9,730.43	-1,287.32	-767.94	1,287.32	1.05	-0.96	0.43
11,268.00	88.10	180.88	9,733.22	-1,381.27	-769.05	1,381.27	0.60	-0.43	0.43
11,362.00	88.40	180.98	9,736.09	-1,475.21	-770.58	1,475.21	0.34	0.32	0.11
11,456.00	88.40	181.58	9,738.71	-1,569.15	-772.68	1,569.15	0.64	0.00	0.64
11,550.00	88.30	181.78	9,741.42	-1,663.07	-775.43	1,663.07	0.24	-0.11	0.21
11,645.00	88.20	181.78	9,744.32	-1,757.98	-778.38	1,757.98	0.11	-0.11	0.00
11,737.00	89.10	180.08	9,746.49	-1,849.94	-779.87	1,849.94	2.09	0.98	-1.85
11,830.00	89.60	178.88	9,747.54	-1,942.93	-779.03	1,942.93	1.40	0.54	-1.29
11,923.00	89.90	178.58	9,747.95	-2,035.90	-776.97	2,035.90	0.46	0.32	-0.32
12,017.00	90.30	178.58	9,747.78	-2,129.88	-774.64	2,129.88	0.43	0.43	0.00
12,110.00	91.00	178.58	9,746.73	-2,222.84	-772.33	2,222.84	0.75	0.75	0.00
12,204.00	88.90	178.58	9,746.81	-2,316.81	-770.00	2,316.81	2.23	-2.23	0.00
12,298.00	89.30	178.78	9,748.29	-2,410.77	-767.84	2,410.77	0.48	0.43	0.21
12,392.00	89.50	178.88	9,749.27	-2,504.74	-765.92	2,504.74	0.24	0.21	0.11
12,485.00	89.90	178.98	9,749.76	-2,597.73	-764.18	2,597.73	0.44	0.43	0.11
12,580.00	90.40	179.38	9,749.51	-2,692.72	-762.82	2,692.72	0.67	0.53	0.42
12,673.00	91.00	180.08	9,748.37	-2,785.71	-762.39	2,785.71	0.99	0.65	0.75
12,766.00	91.20	180.08	9,746.59	-2,878.69	-762.52	2,878.69	0.22	0.22	0.00
12,864.00	89.90	179.78	9,745.65	-2,976.68	-762.40	2,976.68	1.36	-1.33	-0.31
12,957.00	89.10	180.08	9,746.46	-3,069.68	-762.28	3,069.68	0.92	-0.86	0.32
13,052.00	88.90	180.08	9,748.12	-3,164.66	-762.41	3,164.66	0.21	-0.21	0.00
13,145.00	88.40	180.18	9,750.31	-3,257.64	-762.63	3,257.64	0.55	-0.54	0.11
13,240.00	88.60	180.88	9,752.79	-3,352.60	-763.50	3,352.60	0.77	0.21	0.74
13,335.00	89.30	181.48	9,754.54	-3,447.56	-765.46	3,447.56	0.97	0.74	0.63
13,429.00	90.20	181.38	9,754.95	-3,541.53	-767.81	3,541.53	0.96	0.96	-0.11
13,523.00	90.20	181.78	9,754.62	-3,635.50	-770.40	3,635.50	0.43	0.00	0.43
13,617.00	90.30	182.18	9,754.21	-3,729.44	-773.65	3,729.44	0.44	0.11	0.43
13,711.00	89.90	181.08	9,754.04	-3,823.40	-776.32	3,823.40	1.25	-0.43	-1.17
13,805.00	90.20	178.98	9,753.96	-3,917.39	-776.37	3,917.39	2.26	0.32	-2.23
13,899.00	90.50	178.98	9,753.39	-4,011.38	-774.70	4,011.38	0.32	0.32	0.00
13,993.00	90.80	179.18	9,752.32	-4,105.36	-773.19	4,105.36	0.38	0.32	0.21
14,087.00	90.90	179.58	9,750.93	-4,199.34	-772.17	4,199.34	0.44	0.11	0.43
14,181.00	91.20	179.88	9,749.20	-4,293.32	-771.73	4,293.32	0.45	0.32	0.32
14,273.00	89.30	179.28	9,748.80	-4,385.32	-771.05	4,385.32	2.17	-2.07	-0.65
14,367.00	88.40	179.28	9,750.69	-4,479.29	-769.87	4,479.29	0.96	-0.96	0.00
14,460.00	87.60	179.28	9,753.93	-4,572.22	-768.70	4,572.22	0.86	-0.86	0.00
14,554.00	87.40	178.98	9,758.03	-4,666.12	-767.28	4,666.12	0.38	-0.21	-0.32

Survey Report

Company:	Chisholm Energy Holdings, LLC	Local Co-ordinate Reference:	Well Gazelle 32 State 2BS 1H
Project:	Lea County, NM (NAD83)	TVD Reference:	KB=27 @ 3786.00ft (Latshaw 7)
Site:	Sec 32-T18S-R33E	MD Reference:	KB=27 @ 3786.00ft (Latshaw 7)
Well:	Gazelle 32 State 2BS 1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,592.00	87.20	178.98	9,759.82	-4,704.08	-766.60	4,704.08	0.53	-0.53	0.00
Last IDS MWD Survey									
14,646.00	87.20	178.98	9,762.46	-4,758.00	-765.64	4,758.00	0.00	0.00	0.00
Projection to TD - PBHL Gazelle 32 State 2BS 1H									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
151.00	151.00	-0.60	-0.26	First IDS MWD Survey
14,592.00	9,759.82	-4,704.08	-766.60	Last IDS MWD Survey
14,646.00	9,762.46	-4,758.00	-765.64	Projection to TD

Checked By: _____ Approved By: _____ Date: _____