



**CHISHOLM
ENERGY**

NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 20 2018

RECEIVED

Chisholm Energy Holdings, LLC

Eddy County, NM (NAD83)

Sec. 29, T26 S, 26 E

Cottonwood 29-32 Fed Com 1H

Wellbore #1

30-015-43702

Survey: MWD Surveys

Standard Survey Report

11 August, 2017





Integrity Directional Services, LLC

Survey Report



Company:	Chisholm Energy Holdings, LLC	Local Co-ordinate Reference:	Well Cottonwood 29-32 Fed Com 1H
Project:	Eddy County, NM (NAD83)	TVD Reference:	KB=22' @ 3455.00ft (Nabors M55)
Site:	Sec. 29, T26 S, 26 E	MD Reference:	KB=22' @ 3455.00ft (Nabors M55)
Well:	Cottonwood 29-32 Fed Com 1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Multi User Db

Project:	Eddy 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. 29, T26 S, 26 E			
Site Position:		Northing:	370,999.0000 usft	Latitude:	32.0199556
From:	Map	Easting:	545,508.9000 usft	Longitude:	-104.3198738
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.01 °

Well:	Cottonwood 29-32 Fed Com 1H				
Well Position	+N/-S	0.00 ft	Northing:	370,999.0000 usf	Latitude: 32.0199556
	+E/-W	0.00 ft	Easting:	545,508.9000 usf	Longitude: -104.3198738
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level: 3,433.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	7/23/2017	7.48	59.65	47,899

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

Survey Program		Date 8/11/2017		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
119.00	13,710.00	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
119.00	0.50	125.80	119.00	-0.30	0.42	0.30	0.42	0.42	0.00
First MWD Survey @ 119'MD									
179.00	0.60	118.30	179.00	-0.61	0.91	0.61	0.21	0.17	-12.50
240.00	0.60	137.40	239.99	-0.99	1.41	0.99	0.33	0.00	31.31
300.00	0.50	142.40	299.99	-1.43	1.78	1.43	0.18	-0.17	8.33
405.00	0.50	179.00	404.99	-2.25	2.07	2.25	0.30	0.00	34.86
515.00	0.80	260.60	514.98	-2.86	1.32	2.86	0.80	0.27	74.18
603.00	1.00	275.50	602.97	-2.88	-0.05	2.88	0.35	0.23	16.93
730.00	0.90	232.90	729.95	-3.38	-1.95	3.38	0.55	-0.08	-33.54
824.00	0.20	299.80	823.95	-3.74	-2.68	3.74	0.90	-0.74	71.17



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Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Cottonwood 29-32 Fed Com 1H
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ust)	Build Rate (°/100ust)	Turn Rate (°/100ust)
919.00	0.50	285.90	918.95	-3.55	-3.22	3.55	0.33	0.32	-14.63
1,014.00	0.40	309.60	1,013.94	-3.22	-3.88	3.22	0.22	-0.11	24.95
1,110.00	1.10	269.10	1,109.94	-3.02	-5.06	3.02	0.87	0.73	-42.19
1,205.00	0.20	136.80	1,204.93	-3.16	-5.86	3.16	1.31	-0.95	-139.26
1,300.00	1.10	87.10	1,299.92	-3.23	-4.83	3.23	1.03	0.95	-52.32
1,395.00	1.20	78.30	1,394.91	-2.99	-2.95	2.99	0.21	0.11	-9.26
1,490.00	0.90	108.70	1,489.89	-3.02	-1.27	3.02	0.65	-0.32	32.00
1,585.00	0.60	99.90	1,584.88	-3.35	-0.07	3.35	0.34	-0.32	-9.26
1,647.00	1.00	102.10	1,646.88	-3.52	0.78	3.52	0.65	0.65	3.55
1,742.00	0.80	116.10	1,741.86	-3.98	2.18	3.98	0.31	-0.21	14.74
1,837.00	0.60	171.60	1,836.86	-4.77	2.85	4.77	0.71	-0.21	58.42
1,933.00	0.80	153.90	1,932.85	-5.87	3.22	5.87	0.30	0.21	-18.44
2,027.00	1.00	183.00	2,026.84	-7.27	3.47	7.27	0.52	0.21	30.96
2,122.00	1.00	187.10	2,121.83	-8.92	3.32	8.92	0.08	0.00	4.32
2,217.00	0.60	168.50	2,216.82	-10.23	3.32	10.23	0.50	-0.42	-19.58
2,312.00	0.60	195.10	2,311.81	-11.20	3.29	11.20	0.29	0.00	28.00
2,407.00	1.10	197.90	2,406.80	-12.55	2.88	12.55	0.53	0.53	2.95
2,503.00	0.70	203.90	2,502.79	-13.96	2.36	13.96	0.43	-0.42	6.25
2,598.00	1.00	170.20	2,597.78	-15.31	2.26	15.31	0.60	0.32	-35.47
2,693.00	0.90	165.20	2,692.77	-16.85	2.59	16.85	0.14	-0.11	-5.26
2,788.00	1.00	188.70	2,787.75	-18.39	2.66	18.39	0.42	0.11	24.74
2,883.00	0.90	345.60	2,882.75	-18.49	2.35	18.49	1.96	-0.11	165.16
2,977.00	0.80	315.80	2,976.74	-17.30	1.71	17.30	0.48	-0.11	-31.70
3,072.00	0.60	314.70	3,071.73	-16.48	0.89	16.48	0.21	-0.21	-1.16
3,167.00	0.90	278.00	3,166.72	-16.02	-0.20	16.02	0.58	0.32	-38.63
3,262.00	1.10	276.70	3,261.71	-15.81	-1.85	15.81	0.21	0.21	-1.37
3,357.00	1.20	306.30	3,356.69	-15.12	-3.55	15.12	0.63	0.11	31.16
3,452.00	1.20	303.50	3,451.67	-13.98	-5.18	13.98	0.06	0.00	-2.95
3,547.00	0.40	257.40	3,546.66	-13.50	-6.34	13.50	1.02	-0.84	-48.53
3,642.00	0.70	247.70	3,641.66	-13.79	-7.20	13.79	0.33	0.32	-10.21
3,737.00	0.50	246.10	3,736.65	-14.18	-8.11	14.18	0.21	-0.21	-1.68
3,832.00	0.80	261.10	3,831.64	-14.45	-9.15	14.45	0.36	0.32	15.79
3,927.00	1.10	243.70	3,926.63	-14.96	-10.62	14.96	0.43	0.32	-18.32
4,022.00	0.60	271.60	4,021.62	-15.35	-11.93	15.35	0.67	-0.53	29.37
4,117.00	1.20	355.80	4,116.61	-14.34	-12.51	14.34	1.35	0.63	88.63
4,212.00	1.00	337.70	4,211.59	-12.58	-12.89	12.58	0.42	-0.21	-19.05
4,307.00	0.60	343.90	4,306.58	-11.34	-13.34	11.34	0.43	-0.42	6.53
4,402.00	0.50	340.40	4,401.58	-10.47	-13.62	10.47	0.11	-0.11	-3.68
4,497.00	1.40	334.30	4,496.57	-9.03	-14.26	9.03	0.95	0.95	-6.42
4,592.00	1.10	326.20	4,591.54	-7.23	-15.27	7.23	0.37	-0.32	-8.53
4,686.00	1.70	35.60	4,685.52	-5.35	-14.97	5.35	1.77	0.64	73.83
4,781.00	1.50	39.90	4,780.48	-3.25	-13.35	3.25	0.25	-0.21	4.53
4,876.00	1.10	27.30	4,875.46	-1.48	-12.13	1.48	0.52	-0.42	-13.26



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4,970.00	0.70	29.80	4,969.45	-0.18	-11.43	0.18	0.43	-0.43	2.66
5,066.00	0.40	351.00	5,065.44	0.66	-11.19	-0.66	0.48	-0.31	-40.42
5,160.00	0.30	347.40	5,159.44	1.22	-11.30	-1.22	0.11	-0.11	-3.83
5,255.00	0.40	289.80	5,254.44	1.58	-11.66	-1.58	0.37	0.11	-60.63
5,350.00	0.60	314.00	5,349.44	2.03	-12.33	-2.03	0.30	0.21	25.47
5,444.00	0.30	298.40	5,443.43	2.49	-12.90	-2.49	0.34	-0.32	-16.60
5,537.00	0.20	236.40	5,536.43	2.52	-13.25	-2.52	0.29	-0.11	-66.67
5,633.00	0.80	205.20	5,632.43	1.82	-13.68	-1.82	0.66	0.63	-32.50
5,728.00	1.10	206.10	5,727.42	0.40	-14.36	-0.40	0.32	0.32	0.95
5,824.00	1.00	185.90	5,823.40	-1.26	-14.85	1.26	0.40	-0.10	-21.04
5,918.00	0.80	182.90	5,917.39	-2.73	-14.97	2.73	0.22	-0.21	-3.19
5,931.00	0.60	186.30	5,930.39	-2.89	-14.98	2.89	1.57	-1.54	26.15
5,963.00	0.70	195.10	5,962.39	-3.25	-15.05	3.25	0.44	0.31	27.50
5,995.00	1.20	238.80	5,994.38	-3.61	-15.39	3.61	2.64	1.56	136.56
6,026.00	3.40	264.70	6,025.36	-3.86	-16.58	3.86	7.67	7.10	83.55
6,057.00	5.90	267.50	6,056.25	-4.02	-19.09	4.02	8.10	8.06	9.03
6,089.00	8.70	271.00	6,087.99	-4.04	-23.15	4.04	8.86	8.75	10.94
6,121.00	11.50	273.90	6,119.49	-3.79	-28.76	3.79	8.89	8.75	9.06
6,153.00	14.00	275.60	6,150.70	-3.19	-35.79	3.19	7.90	7.81	5.31
6,184.00	15.00	275.80	6,180.71	-2.42	-43.52	2.42	3.23	3.23	0.65
6,216.00	16.80	280.50	6,211.49	-1.16	-52.19	1.16	6.91	5.63	14.69
6,250.00	17.60	279.90	6,243.97	0.62	-62.08	-0.62	2.41	2.35	-1.76
6,282.00	20.30	277.80	6,274.23	2.21	-72.35	-2.21	8.70	8.44	-6.56
6,313.00	23.70	274.20	6,302.97	3.39	-83.89	-3.39	11.79	10.97	-11.61
6,344.00	26.10	268.30	6,331.09	3.65	-96.93	-3.65	11.13	7.74	-19.03
6,375.00	29.90	268.40	6,358.46	3.23	-111.47	-3.23	12.26	12.26	0.32
6,407.00	33.20	269.00	6,385.72	2.85	-128.21	-2.85	10.36	10.31	1.88
6,439.00	35.00	266.00	6,412.22	2.06	-146.13	-2.06	7.70	5.63	-9.38
6,470.00	39.10	264.20	6,436.96	0.45	-164.73	-0.45	13.68	13.23	-5.81
6,502.00	41.30	260.50	6,461.40	-2.31	-185.19	2.31	10.14	6.88	-11.56
6,533.00	42.00	256.20	6,484.57	-6.48	-205.36	6.48	9.49	2.26	-13.87
6,565.00	43.80	256.30	6,508.01	-11.65	-226.51	11.65	5.63	5.63	0.31
6,597.00	46.10	253.80	6,530.66	-17.49	-248.35	17.49	9.06	7.19	-7.81
6,628.00	48.90	253.80	6,551.60	-23.87	-270.29	23.87	9.03	9.03	0.00
6,660.00	51.30	251.10	6,572.13	-31.28	-293.69	31.28	9.91	7.50	-8.44
6,692.00	53.40	249.40	6,591.67	-39.84	-317.53	39.84	7.79	6.56	-5.31
6,724.00	54.50	245.40	6,610.51	-49.79	-341.41	49.79	10.67	3.44	-12.50
6,755.00	56.90	242.20	6,627.98	-61.10	-364.37	61.10	11.52	7.74	-10.32
6,787.00	58.40	238.10	6,645.11	-74.56	-387.81	74.56	11.79	4.69	-12.81
6,818.00	60.30	234.60	6,660.91	-89.34	-410.00	89.34	11.48	6.13	-11.29
6,850.00	63.50	231.40	6,675.99	-106.33	-432.53	106.33	13.33	10.00	-10.00
6,881.00	66.00	227.60	6,689.21	-124.54	-453.84	124.54	13.71	8.06	-12.26
6,889.07	66.52	226.68	6,692.46	-129.57	-459.25	129.57	12.26	6.47	-11.38



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North 330° Hardline Crossing @ 6889.07' MD									
6,913.00	68.10	224.00	6,701.69	-145.09	-474.95	145.09	12.26	6.59	-11.21
6,945.00	70.40	219.70	6,713.04	-167.37	-494.90	167.37	14.47	7.19	-13.44
6,977.00	72.40	215.30	6,723.25	-191.43	-513.35	191.43	14.45	6.25	-13.75
7,008.00	74.20	210.90	6,732.16	-216.30	-529.56	216.30	14.78	5.81	-14.19
7,040.00	75.10	205.90	6,740.63	-243.44	-544.23	243.44	15.33	2.81	-15.63
7,072.00	75.80	202.90	6,748.67	-271.64	-557.02	271.64	9.33	2.19	-9.38
7,104.00	75.00	198.50	6,756.74	-300.60	-567.96	300.60	13.54	-2.50	-13.75
7,135.00	75.30	193.70	6,764.69	-329.38	-576.27	329.38	15.00	0.97	-15.48
7,167.00	75.70	188.60	6,772.71	-359.76	-582.26	359.76	15.48	1.25	-15.94
7,199.00	76.70	184.20	6,780.35	-390.64	-585.72	390.64	13.71	3.13	-13.75
7,231.00	79.60	180.50	6,786.92	-421.92	-587.00	421.92	14.50	9.06	-11.56
7,262.00	84.40	178.90	6,791.23	-452.61	-586.83	452.61	16.31	15.48	-5.16
7,290.00	88.50	178.00	6,792.97	-480.54	-586.08	480.54	14.99	14.64	-3.21
7,385.00	90.70	178.90	6,793.63	-575.49	-583.51	575.49	2.50	2.32	0.95
7,480.00	90.10	179.00	6,792.97	-670.47	-581.77	670.47	0.64	-0.63	0.11
7,575.00	89.90	178.30	6,792.97	-765.45	-579.53	765.45	0.77	-0.21	-0.74
7,670.00	90.10	177.50	6,792.97	-860.38	-576.05	860.38	0.87	0.21	-0.84
7,765.00	90.20	176.90	6,792.72	-955.27	-571.41	955.27	0.64	0.11	-0.63
7,859.00	91.10	177.50	6,791.65	-1,049.15	-566.82	1,049.15	1.15	0.96	0.64
7,955.00	91.70	177.70	6,789.31	-1,145.04	-562.80	1,145.04	0.66	0.63	0.21
8,049.00	92.60	177.60	6,785.78	-1,238.89	-558.94	1,238.89	0.96	0.96	-0.11
8,144.00	92.50	178.70	6,781.55	-1,333.74	-555.88	1,333.74	1.16	-0.11	1.16
8,238.00	93.10	178.60	6,776.96	-1,427.61	-553.67	1,427.61	0.65	0.64	-0.11
8,333.00	94.60	179.30	6,770.58	-1,522.37	-551.93	1,522.37	1.74	1.58	0.74
8,428.00	95.90	179.50	6,761.89	-1,616.97	-550.94	1,616.97	1.38	1.37	0.21
8,523.00	95.10	179.20	6,752.78	-1,711.52	-549.87	1,711.52	0.90	-0.84	-0.32
8,617.00	93.20	179.10	6,745.98	-1,805.26	-548.48	1,805.26	2.02	-2.02	-0.11
8,712.00	93.30	179.00	6,740.60	-1,900.10	-546.90	1,900.10	0.15	0.11	-0.11
8,807.00	94.00	179.30	6,734.55	-1,994.89	-545.50	1,994.89	0.80	0.74	0.32
8,902.00	92.40	179.70	6,729.25	-2,089.74	-544.67	2,089.74	1.74	-1.68	0.42
8,996.00	92.50	180.70	6,725.23	-2,183.65	-545.00	2,183.65	1.07	0.11	1.06
9,091.00	93.20	181.30	6,720.50	-2,278.52	-546.65	2,278.52	0.97	0.74	0.63
9,186.00	93.40	181.40	6,715.04	-2,373.33	-548.89	2,373.33	0.24	0.21	0.11
9,281.00	90.60	180.10	6,711.72	-2,468.25	-550.13	2,468.25	3.25	-2.95	-1.37
9,375.00	90.50	179.70	6,710.82	-2,562.25	-549.97	2,562.25	0.44	-0.11	-0.43
9,470.00	90.50	179.40	6,709.99	-2,657.24	-549.22	2,657.24	0.32	0.00	-0.32
9,566.00	90.60	179.80	6,709.07	-2,753.24	-548.55	2,753.24	0.43	0.10	0.42
9,660.00	90.60	180.30	6,708.08	-2,847.23	-548.63	2,847.23	0.53	0.00	0.53
9,756.00	91.10	180.90	6,706.66	-2,943.21	-549.64	2,943.21	0.81	0.52	0.63
9,851.00	90.80	180.20	6,705.08	-3,038.20	-550.55	3,038.20	0.80	-0.32	-0.74
9,946.00	90.30	177.40	6,704.17	-3,133.16	-548.56	3,133.16	2.99	-0.53	-2.95
10,041.00	89.10	177.40	6,704.67	-3,228.06	-544.25	3,228.06	1.26	-1.26	0.00
10,136.00	88.90	177.80	6,706.33	-3,322.96	-540.27	3,322.96	0.47	-0.21	0.42



Integrity Directional Services, LLC

Survey Report



Company: Chisholm Energy Holdings, LLC
Project: Eddy County, NM (NAD83)
Site: Sec. 29, T26 S, 26 E
Well: Cottonwood 29-32 Fed Com 1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Cottonwood 29-32 Fed Com 1H
TVD Reference: KB=22' @ 3455.00ft (Nabors M55)
MD Reference: KB=22' @ 3455.00ft (Nabors M55)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi User Db

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)
10,231.00	89.80	177.20	6,707.40	-3,417.86	-536.13	3,417.86	1.14	0.95	-0.63
10,325.00	90.50	177.60	6,707.16	-3,511.77	-531.87	3,511.77	0.86	0.74	0.43
10,420.00	91.20	178.20	6,705.75	-3,606.69	-528.38	3,606.69	0.97	0.74	0.63
10,514.00	91.40	178.20	6,703.62	-3,700.62	-525.43	3,700.62	0.21	0.21	0.00
10,609.00	91.90	178.20	6,700.88	-3,795.53	-522.45	3,795.53	0.53	0.53	0.00
10,704.00	92.70	178.30	6,697.07	-3,890.41	-519.55	3,890.41	0.85	0.84	0.11
10,799.00	91.20	178.30	6,693.84	-3,985.31	-516.73	3,985.31	1.58	-1.58	0.00
10,894.00	91.40	178.20	6,691.68	-4,080.24	-513.83	4,080.24	0.24	0.21	-0.11
10,989.00	91.80	178.30	6,689.03	-4,175.16	-510.93	4,175.16	0.43	0.42	0.11
11,084.00	90.60	179.00	6,687.04	-4,270.11	-508.70	4,270.11	1.46	-1.26	0.74
11,179.00	88.50	179.40	6,687.78	-4,365.10	-507.37	4,365.10	2.25	-2.21	0.42
11,274.00	88.30	179.60	6,690.44	-4,460.05	-506.54	4,460.05	0.30	-0.21	0.21
11,369.00	89.10	179.40	6,692.59	-4,555.03	-505.71	4,555.03	0.87	0.84	-0.21
11,463.00	89.40	179.70	6,693.82	-4,649.01	-504.97	4,649.01	0.45	0.32	0.32
11,558.00	89.80	180.00	6,694.49	-4,744.01	-504.73	4,744.01	0.53	0.42	0.32
11,653.00	90.00	180.40	6,694.65	-4,839.01	-505.06	4,839.01	0.47	0.21	0.42
11,748.00	90.20	180.60	6,694.49	-4,934.01	-505.89	4,934.01	0.30	0.21	0.21
11,843.00	90.70	180.70	6,693.74	-5,029.00	-506.96	5,029.00	0.54	0.53	0.11
11,937.63	91.20	180.50	6,692.17	-5,123.61	-507.96	5,123.61	0.57	0.53	-0.21
Sec 29/32 Crossing @ 11937.63'MD									
11,938.00	91.20	180.50	6,692.17	-5,123.98	-507.96	5,123.98	0.57	0.53	-0.21
12,033.00	91.00	178.80	6,690.34	-5,218.96	-507.38	5,218.96	1.80	-0.21	-1.79
12,128.00	90.30	177.70	6,689.26	-5,313.90	-504.48	5,313.90	1.37	-0.74	-1.16
12,223.00	90.70	177.70	6,688.43	-5,408.82	-500.66	5,408.82	0.42	0.42	0.00
12,318.00	89.80	178.80	6,688.02	-5,503.78	-497.76	5,503.78	1.50	-0.95	1.16
12,413.00	89.50	179.00	6,688.60	-5,598.76	-495.94	5,598.76	0.38	-0.32	0.21
12,507.00	89.80	179.40	6,689.17	-5,692.74	-494.63	5,692.74	0.53	0.32	0.43
12,602.00	89.60	179.90	6,689.67	-5,787.74	-494.05	5,787.74	0.57	-0.21	0.53
12,697.00	90.00	180.50	6,690.00	-5,882.74	-494.38	5,882.74	0.76	0.42	0.63
12,791.00	90.60	181.10	6,689.51	-5,976.73	-495.69	5,976.73	0.90	0.64	0.64
12,886.00	90.30	180.00	6,688.77	-6,071.72	-496.60	6,071.72	1.20	-0.32	-1.16
12,980.00	90.50	179.30	6,688.11	-6,165.71	-496.03	6,165.71	0.77	0.21	-0.74
13,075.00	90.00	178.70	6,687.69	-6,260.70	-494.37	6,260.70	0.82	-0.53	-0.63
13,169.00	89.70	178.60	6,687.94	-6,354.67	-492.16	6,354.67	0.34	-0.32	-0.11
13,264.00	89.80	178.60	6,688.35	-6,449.64	-489.84	6,449.64	0.11	0.11	0.00
13,359.00	90.00	177.90	6,688.52	-6,544.60	-486.93	6,544.60	0.77	0.21	-0.74
13,452.00	90.70	177.80	6,687.95	-6,637.53	-483.45	6,637.53	0.76	0.75	-0.11
13,547.00	90.50	177.80	6,686.96	-6,732.45	-479.80	6,732.45	0.21	-0.21	0.00
13,626.00	90.70	178.10	6,686.13	-6,811.40	-476.97	6,811.40	0.46	0.25	0.38
Final MWD Survey @ 13626'MD									
13,704.06	90.70	178.10	6,685.18	-6,889.41	-474.39	6,889.41	0.00	0.00	0.00
South 330' Hardline Crossing @ 13704.06'MD - CW 29-32 Fed Com 1H BHL									
13,710.00	90.70	178.10	6,685.10	-6,895.35	-474.19	6,895.35	0.00	0.00	0.00
Projection to TD @ 13710'MD									



Integrity Directional Services, LLC

Survey Report



Company: Chisholm Energy Holdings, LLC
Project: Eddy County, NM (NAD83)
Site: Sec. 29, T26 S, 26 E
Well: Cottonwood 29-32 Fed Com 1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Cottonwood 29-32 Fed Com 1H
TVD Reference: KB=22' @ 3455.00ft (Nabors M55)
MD Reference: KB=22' @ 3455.00ft (Nabors M55)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi User Db

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)
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Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
CW 29-32 Fed Com 1	0.00	0.00	6,681.90	-6,889.51	-471.40	364,109.5000	545,037.5000	32.0010165	-104.3213972
- survey misses target center by 4.43ft at 13704.06ft MD (6685.18 TVD, -6889.41 N, -474.39 E)									
- Point									

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
119.00	119.00	-0.30	0.42	First MWD Survey @ 119'MD
6,889.07	6,692.46	-129.57	-459.25	North 330' Hardline Crossing @ 6889.07'MD
11,937.63	6,692.17	-5,123.61	-507.96	Sec 29/32 Crossing @ 11937.63'MD
13,626.00	6,686.13	-6,811.40	-476.97	Final MWD Survey @ 13626'MD
13,704.06	6,685.18	-6,889.41	-474.39	South 330' Hardline Crossing @ 13704.06'MD
13,710.00	6,685.10	-6,895.35	-474.19	Projection to TD @ 13710'MD

Checked By: _____ Approved By: _____ Date: _____