

HOBBS OCD

FEB 14 2018

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30-025-43110

Chisholm Energy Holdings, LLC

Lea County, NM (NAD83)

Sec 25-T20S-R34E

Lea South 25 Fed Com WCA 12H

Wellbore #1

Design: Wellbore #1

Standard Survey Report

11 January, 2018

Provide signature page for
directional survey

Survey Report

Company:	Chisholm Energy Holdings, LLC	Local Co-ordinate Reference:	Well Lea South 25 Fed Com WCA 12H
Project:	Lea County, NM (NAD83)	TVD Reference:	KB=26 @ 3786.00ft (Latshaw 17)
Site:	Sec 25-T20S-R34E	MD Reference:	KB=26 @ 3786.00ft (Latshaw 17)
Well:	Lea South 25 Fed Com WCA 12H	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 25-T20S-R34E		
Site Position:		Northing:	560,333.0928 usft
From:	Map	Easting:	793,393.3001 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "
		Latitude:	32.537754
		Longitude:	-103.515421
		Grid Convergence:	0.44 °

Well	Lea South 25 Fed Com WCA 12H, WA		
Well Position	+N/-S	0.00 ft	Northing: 560,357.7000 usft
	+E/-W	0.00 ft	Easting: 796,213.2000 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	0.00 ft
		Latitude:	32.537761
		Longitude:	-103.506271
		Ground Level:	3,760.00 ft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	12/9/2017	6.72
			Dip Angle (°)
			60.48
			Field Strength (nT)
			48,238

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)
	0.00	0.00	0.00
			Direction (°)
			357.39

Survey Program	Date 1/11/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name
185.00	15,966.00	IDS MWD Surveys (Wellbore #1)	MWD
			Description
			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
185.00	0.60	98.00	185.00	-0.13	0.96	-0.18	0.32	0.32	0.00
First IDS MWD Survey									
275.00	0.40	80.00	274.99	-0.15	1.74	-0.22	0.28	-0.22	-20.00
364.00	0.50	73.40	363.99	0.02	2.41	-0.09	0.13	0.11	-7.42
453.00	0.60	88.60	452.99	0.14	3.25	-0.01	0.20	0.11	17.08
542.00	0.50	94.10	541.98	0.12	4.10	-0.06	0.13	-0.11	6.18
662.00	0.50	82.60	661.98	0.15	5.15	-0.08	0.08	0.00	-9.58
723.00	0.00	183.50	722.98	0.19	5.41	-0.06	0.82	-0.82	0.00
816.00	0.30	274.00	815.98	0.21	5.17	-0.03	0.32	0.32	0.00
906.00	0.30	301.00	905.98	0.34	4.73	0.13	0.16	0.00	30.00

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Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Lea South 25 Fed Com WCA 12H
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MD Reference: KB=26 @ 3786.00ft (Latshaw 17)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
998.00	0.30	277.50	997.97	0.50	4.28	0.30	0.13	0.00	-25.54
1,087.00	0.70	299.80	1,086.97	0.80	3.58	0.64	0.49	0.45	25.06
1,178.00	0.80	319.50	1,177.96	1.56	2.69	1.44	0.30	0.11	21.65
1,269.00	0.50	311.30	1,268.96	2.30	1.98	2.21	0.34	-0.33	-9.01
1,362.00	1.80	313.50	1,361.94	3.58	0.61	3.55	1.40	1.40	2.37
1,455.00	2.60	298.80	1,454.87	5.60	-2.30	5.70	1.05	0.86	-15.81
1,547.00	1.80	240.70	1,546.81	5.90	-5.39	6.14	2.44	-0.87	-63.15
1,640.00	2.10	205.50	1,639.76	3.64	-7.39	3.98	1.30	0.32	-37.85
1,733.00	1.80	141.50	1,732.71	0.96	-7.22	1.29	2.24	-0.32	-68.82
1,827.00	1.00	179.70	1,826.69	-1.01	-6.29	-0.72	1.26	-0.85	40.64
1,900.00	1.10	192.20	1,899.68	-2.33	-6.44	-2.04	0.34	0.14	17.12
2,014.00	1.40	194.10	2,013.65	-4.75	-7.01	-4.43	0.27	0.26	1.67
2,108.00	1.90	193.00	2,107.61	-7.39	-7.64	-7.03	0.53	0.53	-1.17
2,202.00	1.80	184.20	2,201.56	-10.38	-8.10	-10.00	0.32	-0.11	-9.36
2,295.00	1.10	168.40	2,294.53	-12.71	-8.03	-12.33	0.86	-0.75	-16.99
2,389.00	1.10	168.10	2,388.51	-14.47	-7.66	-14.11	0.01	0.00	-0.32
2,482.00	1.10	158.10	2,481.50	-16.18	-7.14	-15.83	0.21	0.00	-10.75
2,575.00	1.20	161.10	2,574.48	-17.93	-6.49	-17.61	0.13	0.11	3.23
2,669.00	1.30	164.20	2,668.45	-19.88	-5.88	-19.59	0.13	0.11	3.30
2,762.00	1.20	155.20	2,761.43	-21.78	-5.19	-21.52	0.24	-0.11	-9.68
2,856.00	1.20	155.60	2,855.41	-23.57	-4.37	-23.35	0.01	0.00	0.43
2,949.00	1.40	150.10	2,948.39	-25.44	-3.40	-25.26	0.25	0.22	-5.91
3,043.00	1.60	153.10	3,042.36	-27.61	-2.23	-27.48	0.23	0.21	3.19
3,136.00	1.80	139.70	3,135.32	-29.88	-0.70	-29.82	0.48	0.22	-14.41
3,230.00	1.30	133.70	3,229.28	-31.74	1.02	-31.76	0.56	-0.53	-6.38
3,322.00	0.40	152.30	3,321.27	-32.75	1.93	-32.80	1.01	-0.98	20.22
3,415.00	0.10	172.00	3,414.27	-33.12	2.09	-33.18	0.33	-0.32	21.18
3,509.00	0.30	67.60	3,508.27	-33.11	2.33	-33.18	0.36	0.21	-111.06
3,602.00	0.40	70.00	3,601.27	-32.90	2.86	-33.00	0.11	0.11	2.58
3,695.00	0.40	61.20	3,694.26	-32.63	3.45	-32.76	0.07	0.00	-9.46
3,789.00	0.40	61.00	3,788.26	-32.32	4.02	-32.47	0.00	0.00	-0.21
3,882.00	0.50	76.70	3,881.26	-32.07	4.70	-32.25	0.17	0.11	16.88
3,975.00	0.20	81.10	3,974.26	-31.95	5.26	-32.15	0.32	-0.32	4.73
4,069.00	0.30	66.10	4,068.26	-31.82	5.65	-32.05	0.13	0.11	-15.96
4,161.00	0.40	76.60	4,160.25	-31.65	6.18	-31.90	0.13	0.11	11.41
4,255.00	0.30	25.60	4,254.25	-31.35	6.60	-31.62	0.33	-0.11	-54.26
4,348.00	0.40	16.60	4,347.25	-30.82	6.80	-31.10	0.12	0.11	-9.68
4,440.00	0.40	16.90	4,439.25	-30.21	6.99	-30.49	0.00	0.00	0.33
4,534.00	0.70	7.20	4,533.24	-29.32	7.15	-29.62	0.33	0.32	-10.32
4,627.00	0.50	7.60	4,626.24	-28.36	7.28	-28.66	0.22	-0.22	0.43
4,720.00	0.90	25.30	4,719.23	-27.29	7.64	-27.61	0.48	0.43	19.03
4,814.00	0.90	12.90	4,813.22	-25.91	8.12	-26.25	0.21	0.00	-13.19
4,907.00	1.10	17.00	4,906.21	-24.34	8.55	-24.71	0.23	0.22	4.41

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4,999.00	1.30	15.90	4,998.19	-22.49	9.09	-22.89	0.22	0.22	-1.20	
5,093.00	1.30	15.80	5,092.16	-20.44	9.68	-20.86	0.00	0.00	-0.11	
5,186.00	1.50	25.80	5,185.13	-18.33	10.49	-18.79	0.34	0.22	10.75	
5,279.00	0.80	325.50	5,278.12	-16.70	10.65	-17.17	1.40	-0.75	-64.84	
5,372.00	1.00	275.20	5,371.11	-16.09	9.48	-16.51	0.85	0.22	-54.09	
5,465.00	0.80	261.40	5,464.10	-16.12	8.03	-16.46	0.32	-0.22	-14.84	
5,559.00	0.80	252.50	5,558.09	-16.41	6.75	-16.70	0.13	0.00	-9.47	
5,653.00	1.10	250.20	5,652.07	-16.91	5.28	-17.14	0.32	0.32	-2.45	
5,746.00	1.20	247.00	5,745.06	-17.60	3.54	-17.74	0.13	0.11	-3.44	
5,839.00	1.00	254.90	5,838.04	-18.19	1.86	-18.25	0.27	-0.22	8.49	
5,913.00	1.10	254.00	5,912.03	-18.55	0.56	-18.56	0.14	0.14	-1.22	
6,071.00	1.50	255.40	6,069.99	-19.49	-2.90	-19.34	0.25	0.25	0.89	
6,164.00	1.50	256.80	6,162.95	-20.08	-5.27	-19.82	0.04	0.00	1.51	
6,258.00	1.60	250.50	6,256.92	-20.80	-7.70	-20.42	0.21	0.11	-6.70	
6,351.00	1.50	255.90	6,349.89	-21.53	-10.11	-21.04	0.19	-0.11	5.81	
6,445.00	1.50	257.40	6,443.85	-22.09	-12.50	-21.50	0.04	0.00	1.60	
6,538.00	1.70	260.40	6,536.82	-22.59	-15.05	-21.88	0.23	0.22	3.23	
6,632.00	1.60	260.90	6,630.78	-23.03	-17.72	-22.20	0.11	-0.11	0.53	
6,724.00	1.80	256.10	6,722.74	-23.58	-20.39	-22.63	0.27	0.22	-5.22	
6,817.00	1.40	242.50	6,815.70	-24.46	-22.81	-23.39	0.59	-0.43	-14.62	
6,911.00	1.10	239.30	6,909.68	-25.45	-24.61	-24.30	0.33	-0.32	-3.40	
7,004.00	1.10	239.00	7,002.66	-26.36	-26.14	-25.14	0.01	0.00	-0.32	
7,097.00	1.20	239.40	7,095.64	-27.32	-27.74	-26.02	0.11	0.11	0.43	
7,191.00	1.10	235.70	7,189.62	-28.33	-29.34	-26.96	0.13	-0.11	-3.94	
7,285.00	1.20	231.10	7,283.61	-29.45	-30.85	-28.02	0.14	0.11	-4.89	
7,379.00	1.30	227.10	7,377.58	-30.80	-32.40	-29.29	0.14	0.11	-4.26	
7,473.00	1.50	224.70	7,471.55	-32.40	-34.04	-30.81	0.22	0.21	-2.55	
7,567.00	1.70	228.20	7,565.52	-34.20	-35.95	-32.53	0.24	0.21	3.72	
7,660.00	1.00	225.20	7,658.49	-35.69	-37.55	-33.94	0.76	-0.75	-3.23	
7,754.00	1.00	217.60	7,752.48	-36.92	-38.63	-35.12	0.14	0.00	-8.09	
7,847.00	1.10	222.90	7,845.46	-38.22	-39.74	-36.37	0.15	0.11	5.70	
7,940.00	1.10	231.60	7,938.44	-39.43	-41.04	-37.51	0.18	0.00	9.35	
8,034.00	1.20	223.40	8,032.43	-40.70	-42.43	-38.72	0.20	0.11	-8.72	
8,127.00	1.40	231.20	8,125.40	-42.12	-43.98	-40.07	0.29	0.22	8.39	
8,221.00	1.30	244.90	8,219.38	-43.29	-45.84	-41.16	0.36	-0.11	14.57	
8,315.00	1.30	234.30	8,313.35	-44.37	-47.67	-42.15	0.26	0.00	-11.28	
8,409.00	1.60	243.20	8,407.32	-45.58	-49.71	-43.27	0.40	0.32	9.47	
8,503.00	0.80	215.20	8,501.30	-46.71	-51.26	-44.32	1.03	-0.85	-29.79	
8,598.00	0.90	227.20	8,596.29	-47.76	-52.19	-45.33	0.21	0.11	12.63	
8,693.00	1.30	251.20	8,691.27	-48.61	-53.76	-46.11	0.63	0.42	25.26	
8,788.00	1.10	260.40	8,786.25	-49.11	-55.68	-46.52	0.29	-0.21	9.68	
8,883.00	0.80	258.40	8,881.24	-49.40	-57.23	-46.74	0.32	-0.32	-2.11	
8,979.00	1.20	271.10	8,977.22	-49.51	-58.89	-46.78	0.47	0.42	13.23	

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9,073.00	1.80	278.50	9,071.19	-49.28	-61.33	-46.43	0.67	0.64	7.87
9,168.00	0.40	214.70	9,166.17	-49.33	-63.00	-46.40	1.75	-1.47	-67.16
9,261.00	1.50	248.60	9,259.16	-50.04	-64.31	-47.05	1.28	1.18	36.45
9,355.00	2.20	257.70	9,353.11	-50.87	-67.22	-47.75	0.81	0.74	9.68
9,434.00	1.40	247.30	9,432.07	-51.57	-69.60	-48.34	1.09	-1.01	-13.16
9,527.00	1.40	257.20	9,525.04	-52.26	-71.75	-48.93	0.26	0.00	10.65
9,621.00	1.40	269.10	9,619.02	-52.53	-74.02	-49.10	0.31	0.00	12.66
9,716.00	1.80	263.40	9,713.98	-52.72	-76.66	-49.17	0.45	0.42	-6.00
9,810.00	0.80	244.80	9,807.95	-53.17	-78.72	-49.52	1.14	-1.06	-19.79
9,905.00	0.30	156.30	9,902.95	-53.68	-79.22	-50.01	0.89	-0.53	-93.16
10,000.00	0.40	178.80	9,997.95	-54.24	-79.12	-50.57	0.18	0.11	23.68
10,095.00	0.70	208.20	10,092.94	-55.08	-79.38	-51.40	0.42	0.32	30.95
10,191.00	1.00	195.30	10,188.93	-56.41	-79.88	-52.71	0.37	0.31	-13.44
10,285.00	1.00	207.60	10,282.92	-57.92	-80.48	-54.19	0.23	0.00	13.09
10,380.00	1.10	219.30	10,377.90	-59.36	-81.44	-55.59	0.25	0.11	12.32
10,473.00	1.60	232.60	10,470.88	-60.84	-83.04	-56.99	0.63	0.54	14.30
10,567.00	1.00	233.60	10,564.85	-62.13	-84.74	-58.20	0.64	-0.64	1.06
10,660.00	1.20	247.30	10,657.84	-62.98	-86.29	-58.99	0.35	0.22	14.73
10,756.00	1.40	285.40	10,753.81	-63.06	-88.35	-58.97	0.91	0.21	39.69
10,853.00	1.85	282.33	10,850.77	-62.41	-91.02	-58.20	0.47	0.46	-3.16
10,885.00	2.92	274.51	10,882.75	-62.24	-92.34	-57.96	3.49	3.34	-24.44
10,916.00	6.09	273.81	10,913.65	-62.07	-94.77	-57.68	10.23	10.23	-2.26
10,947.00	9.60	276.01	10,944.35	-61.69	-98.98	-57.11	11.36	11.32	7.10
10,980.00	12.06	289.80	10,976.77	-60.23	-104.96	-55.38	10.78	7.45	41.79
11,011.00	15.36	296.66	11,006.88	-57.29	-111.68	-52.14	11.85	10.65	22.13
11,041.00	18.61	301.32	11,035.57	-53.02	-119.32	-47.52	11.74	10.83	15.53
11,074.00	21.27	307.30	11,066.59	-46.65	-128.58	-40.74	10.15	8.06	18.12
11,106.00	24.88	311.25	11,096.03	-38.69	-138.27	-32.35	12.27	11.28	12.34
11,138.00	28.35	317.40	11,124.64	-28.66	-148.47	-21.86	13.83	10.84	19.22
11,170.00	31.91	325.58	11,152.32	-16.08	-158.41	-8.84	16.96	11.13	25.56
11,201.00	34.26	333.05	11,178.31	-1.53	-167.00	6.08	15.17	7.58	24.10
11,231.00	34.35	337.71	11,203.09	13.83	-174.03	21.75	8.76	0.30	15.53
11,263.00	34.96	340.34	11,229.42	30.82	-180.54	39.02	5.05	1.91	8.22
11,294.00	35.16	342.63	11,254.79	47.70	-186.20	56.14	4.29	0.65	7.39
11,325.00	36.57	346.23	11,279.92	65.19	-191.06	73.83	8.18	4.55	11.61
11,357.00	38.92	351.15	11,305.22	84.39	-194.88	93.19	11.93	7.34	15.38
11,389.00	40.72	353.09	11,329.80	104.69	-197.68	113.59	6.83	5.63	6.06
11,419.00	43.05	353.88	11,352.14	124.58	-199.95	133.57	7.96	7.77	2.63
11,452.00	45.86	355.02	11,375.69	147.58	-202.18	156.65	8.85	8.52	3.45
11,483.00	48.98	355.20	11,396.66	170.33	-204.12	179.45	10.07	10.06	0.58
11,513.00	53.22	355.37	11,415.50	193.59	-206.04	202.78	14.14	14.13	0.57
11,545.00	57.51	356.08	11,433.68	219.84	-208.00	229.09	13.53	13.41	2.22
11,577.00	61.09	357.31	11,450.01	247.30	-209.58	256.60	11.67	11.19	3.84
11,608.00	64.43	358.36	11,464.20	274.84	-210.62	284.16	11.19	10.77	3.39

Survey Report

Company: Chisholm Energy Holdings, LLC
Project: Lea County, NM (NAD83)
Site: Sec 25-T20S-R34E
Well: Lea South 25 Fed Com WCA 12H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Lea South 25 Fed Com WCA 12H
TVD Reference: KB=26 @ 3786.00ft (Latshaw 17)
MD Reference: KB=26 @ 3786.00ft (Latshaw 17)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
11,636.00	66.72	359.50	11,475.78	300.33	-211.09	309.64	8.98	8.18	4.07
11,665.00	68.39	0.56	11,486.85	327.13	-211.07	336.41	6.68	5.76	3.66
11,696.00	70.06	1.00	11,497.85	356.11	-210.68	365.35	5.55	5.39	1.42
11,732.00	71.66	2.75	11,509.65	390.10	-209.56	399.25	6.39	4.44	4.86
11,764.00	73.57	3.98	11,519.21	420.58	-207.77	429.62	7.01	5.97	3.84
11,796.00	76.25	3.11	11,527.54	451.42	-205.86	460.33	8.78	8.38	-2.72
11,827.00	79.24	2.14	11,534.12	481.68	-204.48	490.50	10.12	9.65	-3.13
11,857.00	83.00	359.94	11,538.75	511.30	-203.94	520.07	14.48	12.53	-7.33
11,885.00	86.28	358.01	11,541.37	539.17	-204.44	547.93	13.58	11.71	-6.89
11,920.00	87.86	357.04	11,543.16	574.09	-205.95	582.88	5.30	4.51	-2.77
12,013.00	90.82	357.57	11,544.23	666.97	-210.32	675.87	3.23	3.18	0.57
12,108.00	92.16	358.80	11,541.76	761.89	-213.33	770.82	1.91	1.41	1.29
12,204.00	90.36	359.59	11,539.65	857.85	-214.68	866.75	2.05	-1.88	0.82
12,299.00	89.69	359.59	11,539.61	952.85	-215.36	961.68	0.71	-0.71	0.00
12,394.00	90.10	359.77	11,539.78	1,047.85	-215.89	1,056.60	0.47	0.43	0.19
12,490.00	93.29	0.91	11,536.94	1,143.79	-215.32	1,152.42	3.53	3.32	1.19
12,585.00	92.12	1.26	11,532.46	1,238.66	-213.52	1,247.11	1.29	-1.23	0.37
12,680.00	91.79	1.00	11,529.22	1,333.59	-211.65	1,341.85	0.44	-0.35	-0.27
12,776.00	92.69	1.17	11,525.46	1,429.50	-209.83	1,437.58	0.95	0.94	0.18
12,870.00	93.90	1.26	11,520.06	1,523.32	-207.84	1,531.21	1.29	1.29	0.10
12,965.00	90.67	0.38	11,516.27	1,618.22	-206.49	1,625.95	3.52	-3.40	-0.93
13,061.00	89.62	0.03	11,516.03	1,714.22	-206.14	1,721.83	1.15	-1.09	-0.36
13,155.00	91.62	358.62	11,515.01	1,808.20	-207.25	1,815.77	2.60	2.13	-1.50
13,250.00	91.77	358.54	11,512.20	1,903.13	-209.60	1,910.71	0.18	0.16	-0.08
13,345.00	92.60	358.71	11,508.58	1,998.03	-211.88	2,005.61	0.89	0.87	0.18
13,440.00	93.46	358.54	11,503.56	2,092.87	-214.16	2,100.46	0.92	0.91	-0.18
13,535.00	91.88	358.71	11,499.14	2,187.74	-216.43	2,195.33	1.67	-1.66	0.18
13,630.00	92.03	359.06	11,495.89	2,282.66	-218.28	2,290.24	0.40	0.16	0.37
13,725.00	92.69	358.45	11,491.98	2,377.56	-220.34	2,385.13	0.95	0.69	-0.64
13,819.00	91.83	0.21	11,488.28	2,471.48	-221.44	2,479.00	2.08	-0.91	1.87
13,914.00	88.60	1.08	11,487.92	2,566.46	-220.37	2,573.83	3.52	-3.40	0.92
14,009.00	89.62	1.79	11,489.39	2,661.41	-217.99	2,668.58	1.31	1.07	0.75
14,104.00	92.08	2.67	11,487.99	2,756.32	-214.30	2,763.23	2.75	2.59	0.93
14,199.00	90.69	0.64	11,485.69	2,851.25	-211.56	2,857.93	2.59	-1.46	-2.14
14,294.00	90.19	0.64	11,484.96	2,946.24	-210.50	2,952.77	0.53	-0.53	0.00
14,389.00	90.80	0.21	11,484.14	3,041.23	-209.79	3,047.63	0.79	0.64	-0.45
14,484.00	91.88	1.17	11,481.92	3,136.20	-208.65	3,142.45	1.52	1.14	1.01
14,578.00	89.86	359.33	11,480.49	3,230.17	-208.24	3,236.31	2.91	-2.15	-1.96
14,673.00	88.71	358.89	11,481.68	3,325.15	-209.71	3,331.26	1.30	-1.21	-0.46
14,769.00	91.04	0.82	11,481.88	3,421.14	-209.96	3,427.16	3.15	2.43	2.01
14,864.00	92.65	1.61	11,478.83	3,516.07	-207.94	3,521.89	1.89	1.69	0.83
14,958.00	92.23	0.82	11,474.82	3,609.96	-205.95	3,615.60	0.95	-0.45	-0.84
15,052.00	92.63	0.21	11,470.84	3,703.87	-205.11	3,709.37	0.78	0.43	-0.65

Survey Report

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Local Co-ordinate Reference: Well Lea South 25 Fed Com WCA 12H
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)	
15,147.00	91.02	358.89	11,467.81	3,798.82	-205.85	3,804.25	2.19	-1.69	-1.39	
15,242.00	91.40	359.50	11,465.81	3,893.78	-207.19	3,899.18	0.76	0.40	0.64	
15,337.00	90.14	359.59	11,464.53	3,988.77	-207.94	3,994.10	1.33	-1.33	0.09	
15,432.00	88.82	359.15	11,465.39	4,083.76	-208.99	4,089.04	1.46	-1.39	-0.46	
15,528.00	88.93	359.15	11,467.28	4,179.73	-210.41	4,184.98	0.11	0.11	0.00	
15,621.00	89.07	359.33	11,468.90	4,272.71	-211.64	4,277.91	0.25	0.15	0.19	
15,717.00	89.46	359.59	11,470.13	4,368.69	-212.55	4,373.84	0.49	0.41	0.27	
15,812.00	90.65	0.29	11,470.04	4,463.69	-212.65	4,468.75	1.45	1.25	0.74	
15,883.00	91.64	0.12	11,468.62	4,534.68	-212.39	4,539.65	1.41	1.39	-0.24	
Last IDS MWD Survey										
15,966.00	91.64	0.12	11,466.25	4,617.64	-212.22	4,622.52	0.00	0.00	0.00	
Projection to TD - PBHL Lea South 25 Fed Com WCA 12H										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
185.00	185.00	-0.13	0.96	First IDS MWD Survey	
15,883.00	11,468.62	4,534.68	-212.39	Last IDS MWD Survey	
15,966.00	11,466.25	4,617.64	-212.22	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____