

JDC 7

Chisholm Energy Holdings

Eddy County, NM (NAD 83) Black River 3-10 Fed Com Wca

API#

4H

30-015-44971

Wellbore #1

Design: Actuals

NM OIL COM
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Sperry Drilling Services Combo Report

18 July, 2018

Well Coordinates: 32
-104

North American Datum 1983
New Mexico Eastern Zone
455,813.74 N
557,297.33 E

Ground Level: 3,325.40 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Centered on Well 4H
GL+KB 31' @ 3356.40usft (JDC 7)
N
Grid
API US Survey Feet

Version: 5000.1 Build: 81E

Report Version: Midcon Combo v1.13

HALLIBURTON

[illegible]

... 312.

1. *Chlorophyll a* (Chl *a*)

HALLIBURTON**Design Report for 4H - Actuals**

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
0.00	0.00	0.00	0.00	0.00 N	0.00 E	455,813.74	557,297.33	0.00	0.00	0.00	
199.00	0.56	187.50	199.00	0.96 S	0.13 W	455,812.78	557,297.20	0.28	0.96	187.50	
396.00	1.23	193.84	395.97	3.97 S	0.76 W	455,809.77	557,296.57	0.34	3.97	11.59	
530.00	1.74	183.13	529.93	7.40 S	1.21 W	455,806.34	557,296.12	0.43	7.40	-33.98	
624.00	0.78	178.83	623.90	9.46 S	1.28 W	455,804.28	557,296.05	1.03	9.46	-176.52	
719.00	0.74	149.30	718.89	10.64 S	0.95 W	455,803.10	557,296.38	0.41	10.64	-110.47	
813.00	0.66	137.48	812.89	11.56 S	0.28 W	455,802.18	557,297.05	0.18	11.56	-124.81	
908.00	1.17	122.93	907.88	12.49 S	0.91 E	455,801.25	557,298.24	0.59	12.49	-31.88	
1,002.00	1.16	132.13	1,001.86	13.65 S	2.42 E	455,800.09	557,299.75	0.20	13.65	97.65	
1,096.00	0.97	154.88	1,095.84	15.01 S	3.46 E	455,798.73	557,300.79	0.49	15.01	125.29	
1,191.00	1.07	146.13	1,190.83	16.47 S	4.30 E	455,797.27	557,301.63	0.19	16.47	-61.72	
1,285.00	0.86	122.18	1,284.81	17.58 S	5.38 E	455,796.16	557,302.71	0.48	17.58	-129.13	
1,380.00	2.67	104.00	1,379.76	18.49 S	8.13 E	455,795.25	557,305.46	1.97	18.49	-26.41	
1,474.00	3.44	102.09	1,473.63	19.61 S	13.02 E	455,794.13	557,310.35	0.83	19.61	-8.49	
1,568.00	2.44	100.55	1,567.50	20.57 S	17.74 E	455,793.17	557,315.07	1.07	20.57	-176.25	
1,663.00	1.70	85.76	1,662.44	20.84 S	21.14 E	455,792.90	557,318.47	0.95	20.84	-151.41	
1,758.00	1.21	53.63	1,757.41	20.14 S	23.35 E	455,793.60	557,320.68	0.98	20.14	-136.38	
1,852.00	0.97	349.44	1,851.40	18.77 S	24.00 E	455,794.97	557,321.33	1.25	18.77	-132.05	
1,947.00	1.02	320.57	1,946.39	17.32 S	23.32 E	455,796.42	557,320.65	0.52	17.32	-98.86	
2,041.00	1.10	305.99	2,040.37	16.15 S	22.06 E	455,797.59	557,319.39	0.30	16.15	-80.85	
2,120.00	0.96	297.89	2,119.36	15.39 S	20.86 E	455,798.35	557,318.19	0.26	15.39	-137.88	
2,291.00	0.86	281.26	2,290.34	14.47 S	18.33 E	455,799.27	557,315.66	0.16	14.47	-118.92	
2,386.00	0.97	286.68	2,385.32	14.10 S	16.86 E	455,799.64	557,314.19	0.15	14.10	40.93	
2,480.00	0.99	292.13	2,479.31	13.57 S	15.35 E	455,800.17	557,312.68	0.10	13.57	80.62	
2,575.00	0.99	288.16	2,574.30	13.00 S	13.81 E	455,800.74	557,311.14	0.07	13.00	-91.98	
2,669.00	1.23	280.58	2,668.28	12.56 S	12.05 E	455,801.18	557,309.38	0.30	12.56	-35.29	
2,763.00	1.07	286.38	2,762.26	12.13 S	10.21 E	455,801.61	557,307.54	0.21	12.13	146.84	
2,858.00	1.22	288.58	2,857.24	11.56 S	8.40 E	455,802.18	557,305.73	0.16	11.56	17.44	
2,953.00	1.19	286.55	2,952.22	10.95 S	6.50 E	455,802.79	557,303.83	0.05	10.95	-126.11	
3,047.00	1.19	292.58	3,046.20	10.30 S	4.66 E	455,803.44	557,301.99	0.13	10.30	93.01	
3,142.00	1.22	302.11	3,141.18	9.39 S	2.89 E	455,804.35	557,300.22	0.21	9.39	86.27	
3,236.00	1.01	296.39	3,235.16	8.48 S	1.30 E	455,805.26	557,298.63	0.25	8.48	-154.91	
3,331.00	1.12	293.91	3,330.14	7.74 S	0.30 W	455,806.00	557,297.03	0.13	7.74	-23.98	
3,425.00	1.01	283.12	3,424.13	7.18 S	1.94 W	455,806.56	557,295.39	0.24	7.18	-124.07	
3,520.00	0.79	293.26	3,519.12	6.73 S	3.36 W	455,807.01	557,293.97	0.29	6.73	149.09	
3,614.00	1.00	281.97	3,613.10	6.30 S	4.76 W	455,807.44	557,292.57	0.29	6.30	-45.76	

Design Report for 4H - Actuals

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
3,709.00	0.91	279.93	3,708.09	6.00 S	6.31 W	455,807.74	557,291.02	0.10	6.00	-160.32	
3,803.00	0.97	252.05	3,802.08	6.12 S	7.80 W	455,807.62	557,289.53	0.49	6.12	-96.61	
3,898.00	0.90	248.68	3,897.07	6.63 S	9.26 W	455,807.11	557,288.07	0.09	6.63	-143.52	
3,992.00	0.86	216.83	3,991.06	7.47 S	10.37 W	455,806.27	557,286.96	0.52	7.47	-110.48	
4,087.00	0.99	209.54	4,086.04	8.75 S	11.21 W	455,804.99	557,286.12	0.18	8.75	-45.84	
4,181.00	1.13	213.76	4,180.03	10.23 S	12.12 W	455,803.51	557,285.21	0.17	10.23	31.27	
4,276.00	1.30	212.19	4,275.01	11.92 S	13.22 W	455,801.82	557,284.11	0.18	11.92	-11.87	
4,370.00	1.35	210.48	4,368.98	13.78 S	14.35 W	455,799.96	557,282.98	0.07	13.78	-39.19	
4,464.00	1.56	215.57	4,462.95	15.77 S	15.65 W	455,797.97	557,281.68	0.26	15.77	34.17	
4,559.00	1.26	156.59	4,557.93	17.78 S	15.99 W	455,795.96	557,281.34	1.49	17.78	-130.14	
4,653.00	1.51	69.95	4,651.91	18.31 S	14.41 W	455,795.43	557,282.92	2.03	18.31	-127.84	
4,748.00	1.89	77.20	4,746.87	17.53 S	11.71 W	455,796.21	557,285.62	0.46	17.53	33.17	
4,842.00	2.00	74.15	4,840.81	16.74 S	8.62 W	455,797.00	557,288.71	0.16	16.74	-44.79	
4,937.00	0.91	87.26	4,935.78	16.25 S	6.27 W	455,797.49	557,291.06	1.19	16.25	169.50	
5,031.00	0.66	91.76	5,029.77	16.23 S	4.99 W	455,797.51	557,292.34	0.27	16.23	168.39	
5,125.00	0.66	130.64	5,123.76	16.60 S	4.03 W	455,797.14	557,293.30	0.47	16.60	109.44	
5,220.00	0.77	150.09	5,218.76	17.51 S	3.30 W	455,796.23	557,294.03	0.28	17.51	75.55	
5,317.00	0.89	161.71	5,315.75	18.79 S	2.74 W	455,794.95	557,294.59	0.21	18.79	60.42	
5,411.00	0.94	153.09	5,409.74	20.17 S	2.16 W	455,793.57	557,295.17	0.16	20.17	-74.38	
5,506.00	0.78	150.08	5,504.72	21.43 S	1.49 W	455,792.31	557,295.84	0.17	21.43	-165.73	
5,600.00	0.68	165.99	5,598.72	22.52 S	1.03 W	455,791.22	557,296.30	0.24	22.52	124.07	
5,695.00	0.55	181.46	5,693.71	23.52 S	0.91 W	455,790.22	557,296.42	0.22	23.52	135.62	
5,789.00	0.30	243.32	5,787.71	24.09 S	1.14 W	455,789.65	557,296.19	0.52	24.09	147.07	
5,884.00	0.33	216.23	5,882.71	24.42 S	1.52 W	455,789.32	557,295.81	0.16	24.42	-92.36	
5,978.00	0.62	225.62	5,976.70	24.99 S	2.05 W	455,788.75	557,295.28	0.32	24.99	19.75	
6,072.00	0.66	230.40	6,070.70	25.69 S	2.83 W	455,788.05	557,294.50	0.07	25.69	55.57	
6,167.00	0.49	249.70	6,165.69	26.18 S	3.63 W	455,787.56	557,293.70	0.27	26.18	140.65	
6,261.00	1.05	238.69	6,259.69	26.77 S	4.74 W	455,786.97	557,292.59	0.61	26.77	-20.35	
6,356.00	1.02	223.64	6,354.67	27.83 S	6.07 W	455,785.91	557,291.26	0.29	27.83	-103.79	
6,450.00	1.16	224.50	6,448.65	29.12 S	7.31 W	455,784.62	557,290.02	0.15	29.12	7.10	
6,544.00	1.33	223.36	6,542.63	30.59 S	8.73 W	455,783.15	557,288.60	0.18	30.59	-8.86	
6,639.00	1.23	193.62	6,637.61	32.38 S	9.73 W	455,781.36	557,287.60	0.70	32.38	-113.24	
6,733.00	1.30	193.31	6,731.59	34.40 S	10.21 W	455,779.34	557,287.12	0.07	34.40	-5.74	
6,828.00	1.09	204.57	6,826.56	36.27 S	10.83 W	455,777.47	557,286.50	0.33	36.27	137.34	
6,922.00	1.05	210.81	6,920.55	37.82 S	11.65 W	455,775.92	557,285.68	0.13	37.82	112.05	
7,016.00	1.10	216.89	7,014.53	39.29 S	12.63 W	455,774.45	557,284.70	0.13	39.29	69.39	
7,111.00	1.25	212.84	7,109.51	40.89 S	13.74 W	455,772.85	557,283.59	0.18	40.89	-31.01	

Design Report for 4H - Actuals

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
7,205.00	1.12	205.15	7,203.49	42.58 S	14.69 W	455,771.16	557,282.64	0.22	42.58	-133.07	
7,300.00	1.56	109.84	7,298.47	43.86 S	13.86 W	455,769.88	557,283.47	2.11	43.86	-129.14	
7,395.00	1.10	108.77	7,393.45	44.59 S	11.78 W	455,769.15	557,285.55	0.48	44.59	-177.44	
7,489.00	1.14	100.54	7,487.43	45.05 S	10.01 W	455,768.69	557,287.32	0.18	45.05	-80.17	
7,584.00	0.87	118.53	7,582.42	45.57 S	8.45 W	455,768.17	557,288.88	0.43	45.57	139.31	
7,678.00	1.36	161.63	7,676.40	46.97 S	7.47 W	455,766.77	557,289.86	1.00	46.97	82.45	
7,773.00	1.54	181.32	7,771.37	49.32 S	7.14 W	455,764.42	557,290.19	0.55	49.32	80.16	
7,867.00	2.00	188.01	7,865.32	52.20 S	7.40 W	455,761.54	557,289.93	0.54	52.20	27.56	
7,962.00	2.05	188.10	7,960.27	55.53 S	7.87 W	455,758.21	557,289.46	0.05	55.53	3.68	
8,005.00	2.39	184.03	8,003.23	57.18 S	8.04 W	455,756.56	557,289.29	0.87	57.18	-26.92	
8,025.00	2.35	182.94	8,023.22	58.01 S	8.09 W	455,755.73	557,289.24	0.30	58.01	-132.13	
8,056.00	2.26	197.56	8,054.19	59.22 S	8.31 W	455,754.52	557,289.02	1.91	59.22	105.96	
8,088.00	4.84	246.41	8,086.13	60.37 S	9.74 W	455,753.37	557,287.59	11.75	60.37	75.71	
8,119.00	7.98	260.93	8,116.94	61.23 S	13.06 W	455,752.51	557,284.27	11.32	61.23	34.65	
8,151.00	11.74	263.03	8,148.46	61.98 S	18.49 W	455,751.76	557,278.84	11.80	61.98	6.50	
8,182.00	15.55	262.90	8,178.58	62.87 S	25.75 W	455,750.87	557,271.58	12.29	62.87	-0.52	
8,214.00	18.63	255.12	8,209.17	64.72 S	34.95 W	455,749.02	557,262.38	11.97	64.72	-40.35	
8,245.00	20.25	241.67	8,238.41	68.53 S	44.46 W	455,745.21	557,252.87	15.32	68.53	-76.54	
8,277.00	21.68	229.26	8,268.31	75.02 S	53.82 W	455,738.72	557,243.51	14.55	75.02	-78.01	
8,308.00	22.98	215.79	8,297.00	83.68 S	61.70 W	455,730.06	557,235.63	17.00	83.68	-82.05	
8,340.00	23.57	206.46	8,326.41	94.47 S	68.21 W	455,719.27	557,229.12	11.66	94.47	-85.21	
8,371.00	24.69	199.82	8,354.70	106.12 S	73.16 W	455,707.62	557,224.17	9.47	106.12	-70.63	
8,402.00	26.99	196.88	8,382.60	118.94 S	77.40 W	455,694.80	557,219.93	8.49	118.94	-30.45	
8,434.00	28.37	194.21	8,410.94	133.26 S	81.38 W	455,680.48	557,215.95	5.80	133.26	-43.14	
8,465.00	30.64	192.44	8,437.92	148.12 S	84.89 W	455,665.62	557,212.44	7.84	148.12	-21.78	
8,497.00	32.72	190.51	8,465.15	164.59 S	88.22 W	455,649.15	557,209.11	7.23	164.59	-26.80	
8,528.00	34.89	190.77	8,490.91	181.53 S	91.41 W	455,632.21	557,205.92	7.02	181.53	3.92	
8,560.00	35.86	190.47	8,517.00	199.74 S	94.82 W	455,614.00	557,202.51	3.08	199.74	-10.27	
8,591.00	38.03	190.76	8,541.77	218.06 S	98.25 W	455,595.68	557,199.08	7.02	218.06	4.71	
8,623.00	40.60	190.70	8,566.53	237.97 S	102.03 W	455,575.77	557,195.30	8.03	237.97	-0.87	
8,654.00	43.71	191.42	8,589.51	258.39 S	106.02 W	455,555.35	557,191.31	10.15	258.39	9.10	
8,686.00	45.69	191.39	8,612.25	280.45 S	110.47 W	455,533.29	557,186.86	6.19	280.45	-0.62	
8,717.00	48.99	190.96	8,633.26	302.81 S	114.89 W	455,510.93	557,182.44	10.69	302.81	-5.62	
8,749.00	51.99	191.29	8,653.61	327.04 S	119.65 W	455,486.70	557,177.68	9.41	327.04	4.96	
8,780.00	55.46	190.53	8,671.95	351.57 S	124.38 W	455,462.17	557,172.95	11.37	351.57	-10.24	
8,812.00	59.78	190.15	8,689.09	378.15 S	129.23 W	455,435.59	557,168.10	13.54	378.15	-4.35	
8,843.00	63.18	190.99	8,703.89	404.92 S	134.23 W	455,408.82	557,163.10	11.22	404.92	12.45	

HALLIBURTON**Design Report for 4H - Actuals**

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
8,874.00	67.71	191.56	8,716.76	432.57 S	139.74 W	455,381.17	557,157.59	14.71	432.57	6.65	
8,906.00	70.89	190.92	8,728.07	461.92 S	145.57 W	455,351.82	557,151.76	10.11	461.92	-10.78	
8,937.00	73.75	190.20	8,737.49	490.96 S	150.98 W	455,322.78	557,146.35	9.49	490.96	-13.60	
8,969.00	75.50	189.78	8,745.97	521.34 S	156.33 W	455,292.40	557,141.00	5.61	521.34	-13.09	
9,000.00	77.27	189.53	8,753.27	551.04 S	161.39 W	455,262.70	557,135.94	5.76	551.04	-7.85	
9,032.00	79.67	189.56	8,759.67	581.96 S	166.59 W	455,231.78	557,130.74	7.50	581.96	0.70	
9,064.00	82.06	189.78	8,764.75	613.10 S	171.89 W	455,200.64	557,125.44	7.50	613.10	5.21	
9,095.00	85.43	189.99	8,768.12	643.46 S	177.18 W	455,170.28	557,120.15	10.89	643.46	3.56	
9,127.00	87.31	190.28	8,770.15	674.89 S	182.80 W	455,138.85	557,114.53	5.94	674.89	8.76	
9,158.00	88.99	190.96	8,771.15	705.35 S	188.51 W	455,108.39	557,108.82	5.85	705.35	22.04	
9,190.00	91.20	191.13	8,771.10	736.75 S	194.64 W	455,076.99	557,102.69	6.93	736.75	4.40	
9,221.00	91.91	191.40	8,770.25	767.14 S	200.70 W	455,046.60	557,096.63	2.45	767.14	20.81	
9,241.00	92.53	190.98	8,769.48	786.75 S	204.57 W	455,026.99	557,092.76	3.74	786.75	-34.09	
9,331.00	93.11	190.09	8,765.05	875.12 S	221.01 W	454,938.62	557,076.32	1.18	875.12	-56.86	
9,426.00	90.69	188.33	8,761.90	968.83 S	236.20 W	454,844.91	557,061.13	3.15	968.83	-143.95	
9,520.00	90.15	186.24	8,761.21	1,062.07 S	248.12 W	454,751.67	557,049.21	2.30	1,062.07	-104.48	
9,615.00	90.82	183.63	8,760.41	1,156.70 S	256.29 W	454,657.04	557,041.04	2.84	1,156.70	-75.59	
9,710.00	90.79	180.99	8,759.07	1,251.61 S	260.12 W	454,562.13	557,037.21	2.78	1,251.61	-90.63	
9,804.00	90.65	178.25	8,757.89	1,345.59 S	259.50 W	454,468.15	557,037.83	2.92	1,345.59	-92.91	
9,899.00	90.15	175.40	8,757.23	1,440.43 S	254.24 W	454,373.31	557,043.09	3.05	1,440.43	-99.94	
9,993.00	91.46	173.38	8,755.91	1,533.97 S	245.05 W	454,279.77	557,052.28	2.56	1,533.97	-57.02	
10,087.00	91.86	174.47	8,753.19	1,627.40 S	235.11 W	454,186.34	557,062.22	1.23	1,627.40	69.83	
10,181.00	92.37	174.43	8,749.72	1,720.89 S	226.02 W	454,092.85	557,071.31	0.54	1,720.89	-4.48	
10,276.00	92.13	174.65	8,745.99	1,815.39 S	216.99 W	453,998.35	557,080.34	0.34	1,815.39	137.51	
10,370.00	91.90	175.35	8,742.68	1,908.97 S	208.80 W	453,904.77	557,088.53	0.78	1,908.97	108.19	
10,465.00	91.63	176.57	8,739.76	2,003.69 S	202.11 W	453,810.05	557,095.22	1.31	2,003.69	102.47	
10,559.00	91.16	178.13	8,737.47	2,097.56 S	197.77 W	453,716.18	557,099.56	1.73	2,097.56	106.75	
10,654.00	91.29	180.05	8,735.44	2,192.52 S	196.26 W	453,621.22	557,101.07	2.03	2,192.52	86.11	
10,748.00	90.69	180.67	8,733.81	2,286.50 S	196.85 W	453,527.24	557,100.48	0.92	2,286.50	134.06	
10,843.00	90.96	180.59	8,732.44	2,381.49 S	197.89 W	453,432.25	557,099.44	0.30	2,381.49	-16.50	
10,937.00	91.80	180.73	8,730.18	2,475.45 S	198.98 W	453,338.29	557,098.35	0.91	2,475.45	9.46	
11,031.00	91.86	180.03	8,727.18	2,569.40 S	199.60 W	453,244.34	557,097.73	0.75	2,569.40	-85.09	
11,126.00	91.96	180.76	8,724.01	2,664.35 S	200.25 W	453,149.39	557,097.08	0.78	2,664.35	82.18	
11,220.00	91.93	180.78	8,720.82	2,758.28 S	201.52 W	453,055.46	557,095.81	0.04	2,758.28	146.32	
11,314.00	92.60	180.46	8,717.11	2,852.20 S	202.53 W	452,961.54	557,094.80	0.79	2,852.20	-25.51	
11,409.00	91.98	177.99	8,713.31	2,947.11 S	201.25 W	452,866.63	557,096.08	2.68	2,947.11	-104.05	

Design Report for 4H - Actuals

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates (usft)		Map Coordinates (usft)		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
11,503.00	92.04	181.64	8,710.01	3,041.04 S	200.95 W	452,772.70	557,096.38	3.88	3,041.04	88.99	
11,598.00	91.53	183.44	8,707.05	3,135.89 S	205.15 W	452,677.85	557,092.18	1.97	3,135.89	105.80	
11,692.00	89.88	183.65	8,705.90	3,229.70 S	210.96 W	452,584.04	557,086.37	1.77	3,229.70	172.75	
11,787.00	88.91	183.28	8,706.90	3,324.52 S	216.71 W	452,489.22	557,080.62	1.09	3,324.52	-159.12	
11,882.00	89.41	182.32	8,708.29	3,419.40 S	221.35 W	452,394.34	557,075.98	1.14	3,419.40	-62.49	
11,976.00	89.88	181.59	8,708.87	3,513.34 S	224.55 W	452,300.40	557,072.78	0.92	3,513.34	-57.23	
12,070.00	89.95	181.24	8,709.01	3,607.31 S	226.87 W	452,206.43	557,070.46	0.38	3,607.31	-78.69	
12,165.00	90.79	179.85	8,708.40	3,702.30 S	227.78 W	452,111.44	557,069.55	1.71	3,702.30	-58.85	
12,259.00	90.92	180.33	8,707.00	3,796.29 S	227.93 W	452,017.45	557,069.40	0.53	3,796.29	74.84	
12,353.00	90.92	180.94	8,705.49	3,890.27 S	228.97 W	451,923.47	557,068.36	0.65	3,890.27	90.00	
12,448.00	90.89	181.44	8,703.99	3,985.24 S	230.94 W	451,828.50	557,066.39	0.53	3,985.24	93.43	
12,542.00	90.85	181.15	8,702.56	4,079.21 S	233.06 W	451,734.53	557,064.27	0.31	4,079.21	-97.85	
12,637.00	90.96	180.02	8,701.06	4,174.19 S	234.03 W	451,639.55	557,063.30	1.19	4,174.19	-84.43	
12,731.00	92.30	179.10	8,698.39	4,268.14 S	233.31 W	451,545.60	557,064.02	1.73	4,268.14	-34.45	
12,826.00	92.27	178.01	8,694.60	4,363.04 S	230.92 W	451,450.70	557,066.41	1.15	4,363.04	-91.56	
12,920.00	91.29	177.56	8,691.68	4,456.92 S	227.29 W	451,356.82	557,070.04	1.15	4,456.92	-155.34	
13,015.00	91.49	179.72	8,689.37	4,551.86 S	225.03 W	451,261.88	557,072.30	2.28	4,551.86	84.68	
13,079.00	90.59	179.96	8,688.21	4,615.85 S	224.85 W	451,197.89	557,072.48	1.46	4,615.85	165.07	
13,174.00	90.45	178.74	8,687.35	4,710.84 S	223.78 W	451,102.90	557,073.55	1.29	4,710.84	-96.54	
13,268.00	90.29	178.02	8,686.74	4,804.79 S	221.12 W	451,008.95	557,076.21	0.78	4,804.79	-102.53	
13,363.00	90.42	178.05	8,686.15	4,899.74 S	217.86 W	450,914.00	557,079.47	0.14	4,899.74	12.99	
13,458.00	90.49	178.80	8,685.40	4,994.70 S	215.25 W	450,819.04	557,082.08	0.79	4,994.70	84.66	
13,552.00	91.23	179.82	8,683.99	5,088.68 S	214.12 W	450,725.06	557,083.21	1.34	5,088.68	54.03	
13,647.00	91.36	180.76	8,681.84	5,183.65 S	214.60 W	450,630.09	557,082.73	1.00	5,183.65	82.11	
13,741.00	91.36	181.64	8,679.61	5,277.60 S	216.57 W	450,536.14	557,080.76	0.94	5,277.60	89.99	
13,836.00	91.26	182.66	8,677.44	5,372.51 S	220.13 W	450,441.23	557,077.20	1.08	5,372.51	95.59	
13,931.00	91.23	182.57	8,675.37	5,467.39 S	224.46 W	450,346.35	557,072.87	0.10	5,467.39	-108.44	
14,026.00	91.59	182.91	8,673.04	5,562.25 S	229.00 W	450,251.49	557,068.33	0.52	5,562.25	43.35	
14,120.00	92.03	182.52	8,670.07	5,656.10 S	233.45 W	450,157.64	557,063.88	0.63	5,656.10	-41.53	
14,215.00	92.10	181.97	8,666.64	5,750.96 S	237.17 W	450,062.78	557,060.16	0.58	5,750.96	-82.73	
14,309.00	91.53	182.30	8,663.67	5,844.85 S	240.67 W	449,968.89	557,056.66	0.70	5,844.85	149.94	
14,403.00	91.66	180.37	8,661.05	5,938.78 S	242.86 W	449,874.96	557,054.47	2.06	5,938.78	-86.12	
14,498.00	91.50	177.43	8,658.43	6,033.72 S	241.04 W	449,780.02	557,056.29	3.10	6,033.72	-93.08	
14,592.00	91.26	174.40	8,656.17	6,127.44 S	234.35 W	449,686.30	557,062.98	3.23	6,127.44	-94.49	
14,687.00	91.23	174.16	8,654.10	6,221.95 S	224.88 W	449,591.79	557,072.45	0.25	6,221.95	-97.12	
14,781.00	92.50	176.36	8,651.04	6,315.57 S	217.12 W	449,498.17	557,080.21	2.70	6,315.57	59.96	
14,876.00	91.70	178.48	8,647.56	6,410.40 S	212.84 W	449,403.34	557,084.49	2.38	6,410.40	110.65	

HALLIBURTON**Design Report for 4H - Actuals**

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
14,970.00	89.88	178.89	8,646.27	6,504.37 S	210.69 W	449,309.37	557,086.64	1.98	6,504.37	167.30	
15,065.00	90.25	180.02	8,646.16	6,599.36 S	209.78 W	449,214.38	557,087.55	1.25	6,599.36	71.87	
15,159.00	90.49	180.96	8,645.55	6,693.35 S	210.59 W	449,120.39	557,086.74	1.03	6,693.35	75.67	
15,254.00	90.12	180.22	8,645.04	6,788.35 S	211.57 W	449,025.39	557,085.76	0.87	6,788.35	-116.56	
15,348.00	90.38	180.26	8,644.63	6,882.34 S	211.96 W	448,931.40	557,085.37	0.28	6,882.34	8.75	
15,443.00	90.42	181.13	8,643.97	6,977.33 S	213.11 W	448,836.41	557,084.22	0.92	6,977.33	87.36	
15,537.00	90.59	179.07	8,643.14	7,071.32 S	213.28 W	448,742.42	557,084.05	2.20	7,071.32	-85.27	
15,631.00	90.25	178.97	8,642.45	7,165.31 S	211.67 W	448,648.43	557,085.66	0.38	7,165.31	-163.61	
15,726.00	90.38	179.64	8,641.93	7,260.30 S	210.52 W	448,553.44	557,086.81	0.72	7,260.30	79.02	
15,821.00	90.62	180.95	8,641.10	7,355.29 S	211.00 W	448,458.45	557,086.33	1.40	7,355.29	79.61	
15,915.00	90.32	182.43	8,640.33	7,449.25 S	213.78 W	448,364.49	557,083.55	1.61	7,449.25	101.45	
16,010.00	90.45	182.93	8,639.69	7,544.14 S	218.22 W	448,269.60	557,079.11	0.54	7,544.14	75.42	
16,105.00	90.49	182.09	8,638.91	7,639.04 S	222.38 W	448,174.70	557,074.95	0.89	7,639.04	-87.27	
16,199.00	90.49	180.52	8,638.11	7,733.01 S	224.52 W	448,080.73	557,072.81	1.67	7,733.01	-89.99	
16,294.00	90.25	180.78	8,637.50	7,828.01 S	225.60 W	447,985.73	557,071.73	0.37	7,828.01	132.71	
16,389.00	90.25	179.54	8,637.08	7,923.00 S	225.86 W	447,890.74	557,071.47	1.31	7,923.00	-90.00	
16,483.00	90.56	179.90	8,636.42	8,017.00 S	225.40 W	447,796.74	557,071.93	0.51	8,017.00	49.27	
16,578.00	90.52	180.01	8,635.52	8,111.99 S	225.33 W	447,701.75	557,072.00	0.12	8,111.99	109.98	
16,673.00	90.29	179.96	8,634.85	8,206.99 S	225.30 W	447,606.75	557,072.03	0.25	8,206.99	-167.74	
16,767.00	90.32	179.87	8,634.35	8,300.99 S	225.16 W	447,512.75	557,072.17	0.10	8,300.99	-71.56	
16,862.00	90.25	180.19	8,633.88	8,395.99 S	225.21 W	447,417.75	557,072.12	0.34	8,395.99	102.34	
16,956.00	90.49	179.33	8,633.27	8,489.98 S	224.82 W	447,323.76	557,072.51	0.95	8,489.98	-74.40	
17,050.00	90.38	178.86	8,632.56	8,583.97 S	223.34 W	447,229.77	557,073.99	0.51	8,583.97	-103.17	
17,145.00	90.15	178.65	8,632.12	8,678.95 S	221.27 W	447,134.79	557,076.06	0.33	8,678.95	-137.60	
17,240.00	90.32	178.29	8,631.73	8,773.91 S	218.73 W	447,039.83	557,078.60	0.42	8,773.91	-64.72	
17,334.00	90.38	178.06	8,631.15	8,867.86 S	215.74 W	446,945.88	557,081.59	0.25	8,867.86	-75.38	
17,429.00	90.45	179.88	8,630.47	8,962.84 S	214.03 W	446,850.90	557,083.30	1.92	8,962.84	87.79	
17,523.00	90.22	180.67	8,629.92	9,056.84 S	214.49 W	446,756.90	557,082.84	0.88	9,056.84	106.23	
17,618.00	90.12	179.24	8,629.63	9,151.83 S	214.41 W	446,661.91	557,082.92	1.51	9,151.83	-94.00	
17,712.00	90.25	177.17	8,629.33	9,245.78 S	211.47 W	446,567.96	557,085.86	2.21	9,245.78	-86.40	
17,807.00	90.09	176.25	8,629.05	9,340.62 S	206.01 W	446,473.12	557,091.32	0.98	9,340.62	-99.86	
17,901.00	90.32	176.27	8,628.71	9,434.42 S	199.88 W	446,379.32	557,097.45	0.25	9,434.42	4.97	
17,995.00	90.36	177.59	8,628.15	9,528.28 S	194.85 W	446,285.46	557,102.48	1.40	9,528.28	88.26	
18,090.00	90.22	178.55	8,627.67	9,623.23 S	191.65 W	446,190.51	557,105.68	1.02	9,623.23	98.29	
18,184.00	90.32	180.36	8,627.23	9,717.22 S	190.76 W	446,096.52	557,106.57	1.93	9,717.22	86.83	
18,279.00	90.22	181.70	8,626.78	9,812.20 S	192.46 W	446,001.54	557,104.87	1.41	9,812.20	94.26	Last MWD Survey - 18279.00' MD
18,360.00	90.22	181.70	8,626.47	9,893.16 S	194.87 W	445,920.58	557,102.46	0.00	9,893.16	0.00	Projection to TD - 18360.00' MD

Design Report for 4H - Actuals

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
18,279.00	8,626.78	-9,812.20	-192.46	Last MWD Survey - 18279.00' MD
18,360.00	8,626.47	-9,893.16	-194.87	Projection to TD - 18360.00' MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	180.00	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
199.00	18,279.00	HAL MWD	MWD
18,360.00	18,360.00	Projection to TD	Blind (OWSG)

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (°)	+N/-S (°)	+E/-W (°)	Northing (°)	Easting (°)	Latitude	Longitude
0									

Design Report for 4H - Actuals

Directional Difficulty Index

Average Dogleg over Survey: 1.39 °/100usft

Maximum Dogleg over Survey: 17.00 °/100usft at 8,308.00
usft

Net Tortousity applicable to Plans: 0.12 °/100usft

Directional Difficulty Index: 6.731

Audit Info

North Reference Sheet for Black River 3-10 Fed Com Wca - 4H - Wellbore #1

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to GL+KB 31' @ 3356.40usft (JDC 7). Northing and Easting are relative to 4H

Coordinate System is US State Plane 1983, New Mexico Eastern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is 104° 20' 0.000 W°, Longitude Origin: 0° 0' 0.000 E°, Latitude Origin: 0° 0' 0.000 N°

False Easting: 541,337.50usft, False Northing: 0.00usft, Scale Reduction: 0.99990938

Grid Coordinates of Well: 455,813.74 usft N, 557,297.33 usft E

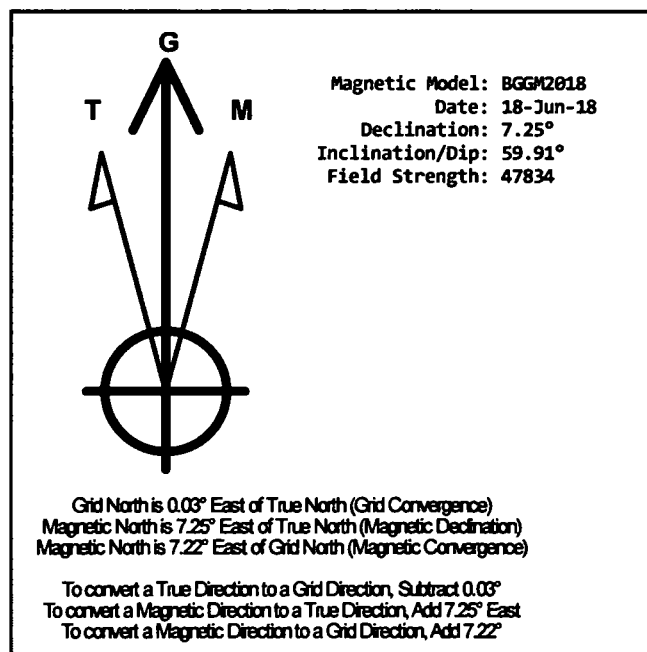
Geographical Coordinates of Well: 32° 15' 11.15" N, 104° 16' 54.14" W

Grid Convergence at Surface is: 0.03°

Based upon Minimum Curvature type calculations, at a Measured Depth of 18,360.00usft

the Bottom Hole Displacement is 9,895.08usft in the Direction of 181.13° (Grid).

Magnetic Convergence at surface is: -7.22° (18 June 2018, , BGGM2018)



Chisholm Energy Holdings

GL+KB 31' @ 3356.40usft (JDC 7)

Ground Level: 3325.40

Project: Eddy County, NM (NAD 83)
Site: Black River 3-10 Fed Com Wca
Well: 4H
Wellbore: Wellbore #1
Design: Actuals
Rig: JDC 7

Map System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone Name: New Mexico Eastern Zone



Azimuths to Grid North
True North: -0.03°
Magnetic North: 7.22°

Magnetic Field
Strength: 47834.1nT
Dip Angle: 59.91°
Date: 6/16/2018
Model: BGGM2018

