

Conoco Phillips Company

Arapahoe County, Colorado

Sec. 18-T4S-R64W

Montezuma 4-64 18-13 4H (Re-Stake)

Plan C

Plan: Rev C0

Sperry Drilling Services

Proposal Report

07 April, 2015

Well Coordinates: 1,679,994.65 N, 3,256,721.22 E (39° 41' 48.65" N, 104° 35' 15.61" W)

Ground Level: 5,691.80 usft

Local Coordinate Origin:

Centered on Well Montezuma 4-64 18-13 4H (Re-Stake)

Viewing Datum:

KB 24 ft @ 5715.80usft (Unknown)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

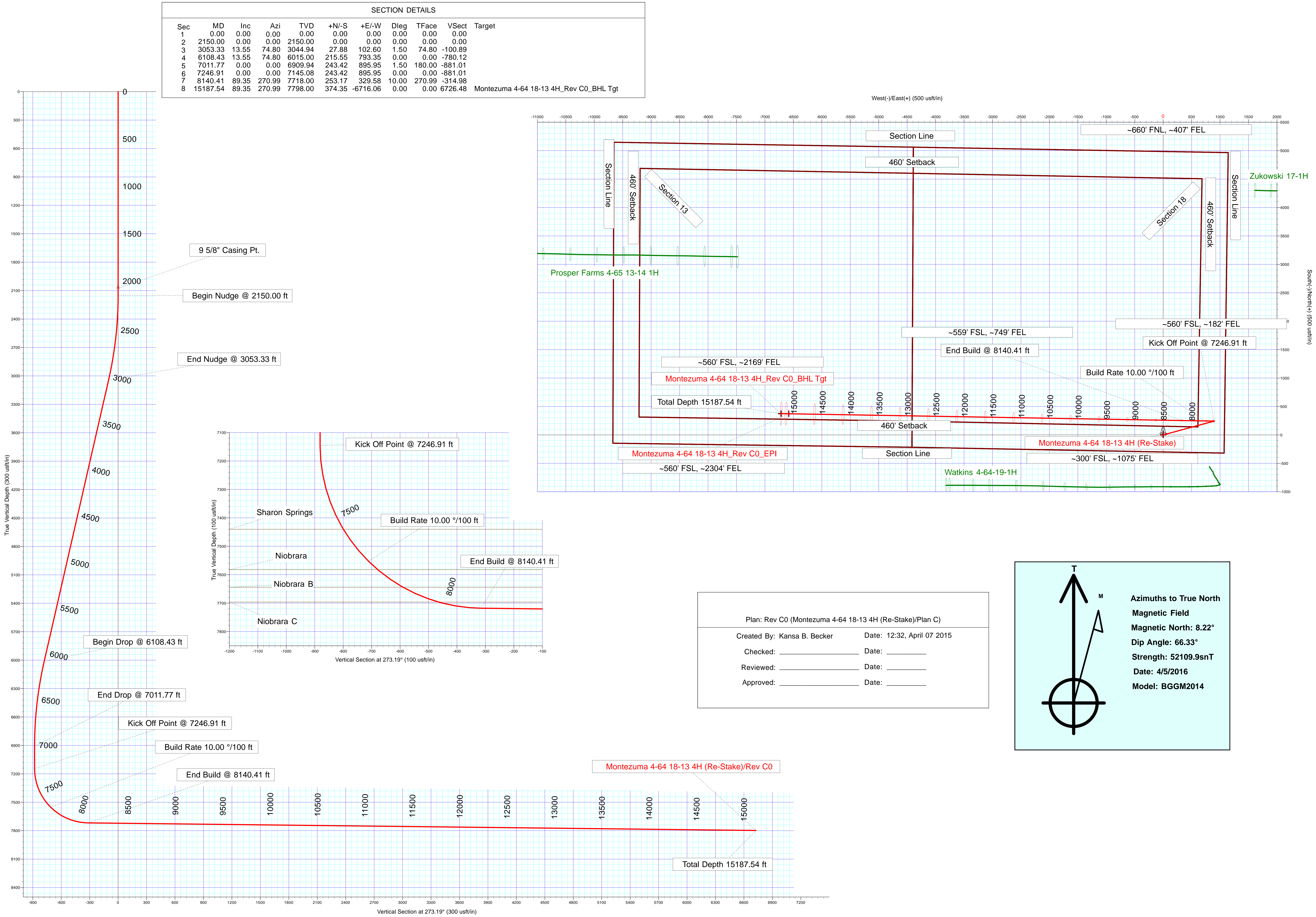
Geodetic Scale Factor Applied

Version: 5000.1 Build: 73

HALLIBURTON

Project: Arapahoe County, Colorado
Site: Sec. 18-T4S-R64W
Well: Montezuma 4-64 18-13 4H (Re-Stake)
Wellbore: Plan C
Plan: Rev C0

Conoco Phillips Company



Plan Report for Montezuma 4-64 18-13 4H (Re-Stake) - Rev C0

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,766.30	0.00	0.00	1,766.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills										
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,874.30	0.00	0.00	1,874.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre Shale										
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,074.30	0.00	0.00	2,074.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface Casing										
2,076.00	0.00	0.00	2,076.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8" Casing Pt.										
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,150.00	0.00	0.00	2,150.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 2150.00 ft										
2,200.00	0.75	74.80	2,200.00	0.09	0.32	-0.31	1.50	1.50	0.00	74.80
2,300.00	2.25	74.80	2,299.96	0.77	2.84	-2.79	1.50	1.50	0.00	0.00
2,400.00	3.75	74.80	2,399.82	2.14	7.89	-7.76	1.50	1.50	0.00	0.00
2,500.00	5.25	74.80	2,499.51	4.20	15.46	-15.21	1.50	1.50	0.00	0.00
2,600.00	6.75	74.80	2,598.96	6.94	25.55	-25.12	1.50	1.50	0.00	0.00
2,700.00	8.25	74.80	2,698.10	10.36	38.15	-37.51	1.50	1.50	0.00	0.00
2,800.00	9.75	74.80	2,796.87	14.47	53.24	-52.35	1.50	1.50	0.00	0.00
2,900.00	11.25	74.80	2,895.19	19.24	70.83	-69.65	1.50	1.50	0.00	0.00
3,000.00	12.75	74.80	2,993.00	24.69	90.89	-89.38	1.50	1.50	0.00	0.00
3,053.33	13.55	74.80	3,044.94	27.88	102.60	-100.89	1.50	1.50	0.00	0.00
End Nudge @ 3053.33 ft										
3,100.00	13.55	74.80	3,090.30	30.74	113.15	-111.26	0.00	0.00	0.00	0.00
3,200.00	13.55	74.80	3,187.52	36.89	135.76	-133.50	0.00	0.00	0.00	0.00
3,300.00	13.55	74.80	3,284.74	43.03	158.37	-155.73	0.00	0.00	0.00	0.00
3,400.00	13.55	74.80	3,381.95	49.17	180.98	-177.96	0.00	0.00	0.00	0.00
3,500.00	13.55	74.80	3,479.17	55.31	203.59	-200.20	0.00	0.00	0.00	0.00
3,600.00	13.55	74.80	3,576.39	61.46	226.20	-222.43	0.00	0.00	0.00	0.00
3,700.00	13.55	74.80	3,673.60	67.60	248.81	-244.66	0.00	0.00	0.00	0.00
3,800.00	13.55	74.80	3,770.82	73.74	271.42	-266.89	0.00	0.00	0.00	0.00
3,900.00	13.55	74.80	3,868.04	79.89	294.03	-289.13	0.00	0.00	0.00	0.00
4,000.00	13.55	74.80	3,965.25	86.03	316.64	-311.36	0.00	0.00	0.00	0.00
4,100.00	13.55	74.80	4,062.47	92.17	339.25	-333.59	0.00	0.00	0.00	0.00
4,200.00	13.55	74.80	4,159.69	98.31	361.86	-355.83	0.00	0.00	0.00	0.00
4,300.00	13.55	74.80	4,256.90	104.46	384.47	-378.06	0.00	0.00	0.00	0.00
4,400.00	13.55	74.80	4,354.12	110.60	407.08	-400.29	0.00	0.00	0.00	0.00
4,500.00	13.55	74.80	4,451.34	116.74	429.69	-422.52	0.00	0.00	0.00	0.00

Plan Report for Montezuma 4-64 18-13 4H (Re-Stake) - Rev C0

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
4,600.00	13.55	74.80	4,548.55	122.89	452.30	-444.76	0.00	0.00	0.00	0.00
4,700.00	13.55	74.80	4,645.77	129.03	474.91	-466.99	0.00	0.00	0.00	0.00
4,800.00	13.55	74.80	4,742.99	135.17	497.52	-489.22	0.00	0.00	0.00	0.00
4,900.00	13.55	74.80	4,840.20	141.32	520.13	-511.45	0.00	0.00	0.00	0.00
5,000.00	13.55	74.80	4,937.42	147.46	542.74	-533.69	0.00	0.00	0.00	0.00
5,100.00	13.55	74.80	5,034.64	153.60	565.35	-555.92	0.00	0.00	0.00	0.00
5,200.00	13.55	74.80	5,131.85	159.74	587.96	-578.15	0.00	0.00	0.00	0.00
5,300.00	13.55	74.80	5,229.07	165.89	610.56	-600.39	0.00	0.00	0.00	0.00
5,400.00	13.55	74.80	5,326.29	172.03	633.17	-622.62	0.00	0.00	0.00	0.00
5,500.00	13.55	74.80	5,423.50	178.17	655.78	-644.85	0.00	0.00	0.00	0.00
5,600.00	13.55	74.80	5,520.72	184.32	678.39	-667.08	0.00	0.00	0.00	0.00
5,700.00	13.55	74.80	5,617.94	190.46	701.00	-689.32	0.00	0.00	0.00	0.00
5,800.00	13.55	74.80	5,715.15	196.60	723.61	-711.55	0.00	0.00	0.00	0.00
5,900.00	13.55	74.80	5,812.37	202.74	746.22	-733.78	0.00	0.00	0.00	0.00
6,000.00	13.55	74.80	5,909.59	208.89	768.83	-756.02	0.00	0.00	0.00	0.00
6,100.00	13.55	74.80	6,006.80	215.03	791.44	-778.25	0.00	0.00	0.00	0.00
6,108.43	13.55	74.80	6,015.00	215.55	793.35	-780.12	0.00	0.00	0.00	0.00
Begin Drop @ 6108.43 ft										
6,200.00	12.18	74.80	6,104.27	220.89	813.02	-799.47	1.50	-1.50	0.00	180.00
6,300.00	10.68	74.80	6,202.28	226.09	832.14	-818.27	1.50	-1.50	0.00	180.00
6,400.00	9.18	74.80	6,300.78	230.61	848.77	-834.62	1.50	-1.50	0.00	180.00
6,500.00	7.68	74.80	6,399.70	234.45	862.91	-848.53	1.50	-1.50	0.00	180.00
6,600.00	6.18	74.80	6,498.97	237.61	874.55	-859.97	1.50	-1.50	0.00	180.00
6,700.00	4.68	74.80	6,598.52	240.09	883.68	-868.95	1.50	-1.50	0.00	180.00
6,800.00	3.18	74.80	6,698.28	241.89	890.29	-875.44	1.50	-1.50	0.00	180.00
6,900.00	1.68	74.80	6,798.19	243.00	894.37	-879.46	1.50	-1.50	0.00	180.00
7,000.00	0.18	74.80	6,898.17	243.42	895.93	-881.00	1.50	-1.50	0.00	180.00
7,011.77	0.00	0.00	6,909.94	243.42	895.95	-881.01	1.50	-1.50	0.00	-180.00
End Drop @ 7011.77 ft										
7,100.00	0.00	0.00	6,998.17	243.42	895.95	-881.01	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,098.17	243.42	895.95	-881.01	0.00	0.00	0.00	0.00
7,246.91	0.00	0.00	7,145.08	243.42	895.95	-881.01	0.00	0.00	0.00	0.00
Kick Off Point @ 7246.91 ft										
7,300.00	5.31	270.99	7,198.09	243.47	893.49	-878.56	10.00	10.00	0.00	270.99
7,400.00	15.31	270.99	7,296.36	243.77	875.62	-860.70	10.00	10.00	0.00	0.00
7,500.00	25.31	270.99	7,390.02	244.37	840.96	-826.06	10.00	10.00	0.00	0.00
7,557.06	31.01	270.99	7,440.30	244.83	814.05	-799.16	10.00	10.00	0.00	0.00
Sharon Springs										
7,600.00	35.31	270.99	7,476.24	245.24	790.57	-775.69	10.00	10.00	0.00	0.00
7,700.00	45.31	270.99	7,552.40	246.35	725.97	-711.13	10.00	10.00	0.00	0.00
Build Rate 10.00 °/100 ft										
7,744.29	49.74	270.99	7,582.30	246.91	693.32	-678.50	10.00	10.00	0.00	0.00
Niobrara										
7,800.00	55.31	270.99	7,616.19	247.67	649.13	-634.34	10.00	10.00	0.00	0.00
7,853.01	60.61	270.99	7,644.30	248.44	604.21	-589.45	10.00	10.00	0.00	0.00
Niobrara B										
7,900.00	65.31	270.99	7,665.65	249.16	562.38	-547.64	10.00	10.00	0.00	0.00
7,988.58	74.17	270.99	7,696.30	250.59	479.38	-464.69	10.00	10.00	0.00	0.00
Niobrara C										
8,000.00	75.31	270.99	7,699.31	250.78	468.36	-453.68	10.00	10.00	0.00	0.00
8,100.00	85.31	270.99	7,716.12	252.47	369.93	-355.30	10.00	10.00	0.00	0.00
8,140.41	89.35	270.99	7,718.00	253.17	329.58	-314.98	10.00	10.00	0.00	0.00
End Build @ 8140.41 ft										
8,200.00	89.35	270.99	7,718.68	254.19	270.00	-255.43	0.00	0.00	0.00	0.00
8,300.00	89.35	270.99	7,719.81	255.91	170.02	-155.51	0.00	0.00	0.00	0.00
8,400.00	89.35	270.99	7,720.95	257.63	70.04	-55.59	0.00	0.00	0.00	0.00
8,500.00	89.35	270.99	7,722.08	259.35	-29.94	44.33	0.00	0.00	0.00	0.00
8,600.00	89.35	270.99	7,723.22	261.07	-129.92	144.25	0.00	0.00	0.00	0.00

Plan Report for Montezuma 4-64 18-13 4H (Re-Stake) - Rev C0

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
8,700.00	89.35	270.99	7,724.35	262.79	-229.90	244.17	0.00	0.00	0.00	0.00
8,800.00	89.35	270.99	7,725.49	264.51	-329.88	344.09	0.00	0.00	0.00	0.00
8,900.00	89.35	270.99	7,726.62	266.23	-429.85	444.00	0.00	0.00	0.00	0.00
9,000.00	89.35	270.99	7,727.76	267.95	-529.83	543.92	0.00	0.00	0.00	0.00
9,100.00	89.35	270.99	7,728.89	269.67	-629.81	643.84	0.00	0.00	0.00	0.00
9,200.00	89.35	270.99	7,730.03	271.39	-729.79	743.76	0.00	0.00	0.00	0.00
9,300.00	89.35	270.99	7,731.16	273.11	-829.77	843.68	0.00	0.00	0.00	0.00
9,400.00	89.35	270.99	7,732.30	274.83	-929.75	943.60	0.00	0.00	0.00	0.00
9,500.00	89.35	270.99	7,733.44	276.55	-1,029.73	1,043.52	0.00	0.00	0.00	0.00
9,600.00	89.35	270.99	7,734.57	278.27	-1,129.71	1,143.44	0.00	0.00	0.00	0.00
9,700.00	89.35	270.99	7,735.71	279.99	-1,229.68	1,243.36	0.00	0.00	0.00	0.00
9,800.00	89.35	270.99	7,736.84	281.71	-1,329.66	1,343.28	0.00	0.00	0.00	0.00
9,900.00	89.35	270.99	7,737.98	283.43	-1,429.64	1,443.20	0.00	0.00	0.00	0.00
10,000.00	89.35	270.99	7,739.11	285.14	-1,529.62	1,543.12	0.00	0.00	0.00	0.00
10,100.00	89.35	270.99	7,740.25	286.86	-1,629.60	1,643.04	0.00	0.00	0.00	0.00
10,200.00	89.35	270.99	7,741.38	288.58	-1,729.58	1,742.96	0.00	0.00	0.00	0.00
10,300.00	89.35	270.99	7,742.52	290.30	-1,829.56	1,842.88	0.00	0.00	0.00	0.00
10,400.00	89.35	270.99	7,743.65	292.02	-1,929.54	1,942.80	0.00	0.00	0.00	0.00
10,500.00	89.35	270.99	7,744.79	293.74	-2,029.51	2,042.72	0.00	0.00	0.00	0.00
10,600.00	89.35	270.99	7,745.92	295.46	-2,129.49	2,142.64	0.00	0.00	0.00	0.00
10,700.00	89.35	270.99	7,747.06	297.18	-2,229.47	2,242.56	0.00	0.00	0.00	0.00
10,800.00	89.35	270.99	7,748.19	298.90	-2,329.45	2,342.48	0.00	0.00	0.00	0.00
10,900.00	89.35	270.99	7,749.33	300.62	-2,429.43	2,442.40	0.00	0.00	0.00	0.00
11,000.00	89.35	270.99	7,750.46	302.34	-2,529.41	2,542.31	0.00	0.00	0.00	0.00
11,100.00	89.35	270.99	7,751.60	304.06	-2,629.39	2,642.23	0.00	0.00	0.00	0.00
11,200.00	89.35	270.99	7,752.73	305.78	-2,729.37	2,742.15	0.00	0.00	0.00	0.00
11,300.00	89.35	270.99	7,753.87	307.50	-2,829.34	2,842.07	0.00	0.00	0.00	0.00
11,400.00	89.35	270.99	7,755.00	309.22	-2,929.32	2,941.99	0.00	0.00	0.00	0.00
11,500.00	89.35	270.99	7,756.14	310.94	-3,029.30	3,041.91	0.00	0.00	0.00	0.00
11,600.00	89.35	270.99	7,757.27	312.66	-3,129.28	3,141.83	0.00	0.00	0.00	0.00
11,700.00	89.35	270.99	7,758.41	314.38	-3,229.26	3,241.75	0.00	0.00	0.00	0.00
11,800.00	89.35	270.99	7,759.54	316.10	-3,329.24	3,341.67	0.00	0.00	0.00	0.00
11,900.00	89.35	270.99	7,760.68	317.82	-3,429.22	3,441.59	0.00	0.00	0.00	0.00
12,000.00	89.35	270.99	7,761.82	319.54	-3,529.20	3,541.51	0.00	0.00	0.00	0.00
12,100.00	89.35	270.99	7,762.95	321.26	-3,629.17	3,641.43	0.00	0.00	0.00	0.00
12,200.00	89.35	270.99	7,764.09	322.98	-3,729.15	3,741.35	0.00	0.00	0.00	0.00
12,300.00	89.35	270.99	7,765.22	324.70	-3,829.13	3,841.27	0.00	0.00	0.00	0.00
12,400.00	89.35	270.99	7,766.36	326.42	-3,929.11	3,941.19	0.00	0.00	0.00	0.00
12,500.00	89.35	270.99	7,767.49	328.14	-4,029.09	4,041.11	0.00	0.00	0.00	0.00
12,600.00	89.35	270.99	7,768.63	329.86	-4,129.07	4,141.03	0.00	0.00	0.00	0.00
12,700.00	89.35	270.99	7,769.76	331.58	-4,229.05	4,240.95	0.00	0.00	0.00	0.00
12,800.00	89.35	270.99	7,770.90	333.30	-4,329.03	4,340.87	0.00	0.00	0.00	0.00
12,900.00	89.35	270.99	7,772.03	335.02	-4,429.01	4,440.79	0.00	0.00	0.00	0.00
13,000.00	89.35	270.99	7,773.17	336.74	-4,528.98	4,540.71	0.00	0.00	0.00	0.00
13,100.00	89.35	270.99	7,774.30	338.46	-4,628.96	4,640.62	0.00	0.00	0.00	0.00
13,200.00	89.35	270.99	7,775.44	340.17	-4,728.94	4,740.54	0.00	0.00	0.00	0.00
13,300.00	89.35	270.99	7,776.57	341.89	-4,828.92	4,840.46	0.00	0.00	0.00	0.00
13,400.00	89.35	270.99	7,777.71	343.61	-4,928.90	4,940.38	0.00	0.00	0.00	0.00
13,500.00	89.35	270.99	7,778.84	345.33	-5,028.88	5,040.30	0.00	0.00	0.00	0.00
13,600.00	89.35	270.99	7,779.98	347.05	-5,128.86	5,140.22	0.00	0.00	0.00	0.00
13,700.00	89.35	270.99	7,781.11	348.77	-5,228.84	5,240.14	0.00	0.00	0.00	0.00
13,800.00	89.35	270.99	7,782.25	350.49	-5,328.81	5,340.06	0.00	0.00	0.00	0.00
13,900.00	89.35	270.99	7,783.38	352.21	-5,428.79	5,439.98	0.00	0.00	0.00	0.00
14,000.00	89.35	270.99	7,784.52	353.93	-5,528.77	5,539.90	0.00	0.00	0.00	0.00
14,100.00	89.35	270.99	7,785.65	355.65	-5,628.75	5,639.82	0.00	0.00	0.00	0.00
14,200.00	89.35	270.99	7,786.79	357.37	-5,728.73	5,739.74	0.00	0.00	0.00	0.00
14,300.00	89.35	270.99	7,787.92	359.09	-5,828.71	5,839.66	0.00	0.00	0.00	0.00
14,400.00	89.35	270.99	7,789.06	360.81	-5,928.69	5,939.58	0.00	0.00	0.00	0.00
14,500.00	89.35	270.99	7,790.20	362.53	-6,028.67	6,039.50	0.00	0.00	0.00	0.00
14,600.00	89.35	270.99	7,791.33	364.25	-6,128.64	6,139.42	0.00	0.00	0.00	0.00

Plan Report for Montezuma 4-64 18-13 4H (Re-Stake) - Rev C0

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
14,700.00	89.35	270.99	7,792.47	365.97	-6,228.62	6,239.34	0.00	0.00	0.00	0.00
14,800.00	89.35	270.99	7,793.60	367.69	-6,328.60	6,339.26	0.00	0.00	0.00	0.00
14,900.00	89.35	270.99	7,794.74	369.41	-6,428.58	6,439.18	0.00	0.00	0.00	0.00
15,000.00	89.35	270.99	7,795.87	371.13	-6,528.56	6,539.10	0.00	0.00	0.00	0.00
15,100.00	89.35	270.99	7,797.01	372.85	-6,628.54	6,639.02	0.00	0.00	0.00	0.00
15,187.54	89.35	270.99	7,798.00	374.35	-6,716.06	6,726.48	0.00	0.00	0.00	0.00
Total Depth 15187.54 ft										

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,150.00	2,150.00	0.00	0.00	Begin Nudge @ 2150.00 ft
3,053.33	3,044.94	27.88	102.60	End Nudge @ 3053.33 ft
6,108.43	6,015.00	215.55	793.35	Begin Drop @ 6108.43 ft
7,011.77	6,909.94	243.42	895.95	End Drop @ 7011.77 ft
7,246.91	7,145.08	243.42	895.95	Kick Off Point @ 7246.91 ft
7,700.00	7,552.40	246.35	725.97	Build Rate 10.00 °/100 ft
8,140.41	7,718.00	253.17	329.58	End Build @ 8140.41 ft
15,187.54	7,798.00	374.35	-6,716.06	Total Depth 15187.54 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
Target	Montezuma 4-64 18-13 4H_Rev C0_BHL Tgt	273.19	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	2,076.00	Rev C0	NS-GYRO-MS
2,076.00	15,187.54	Rev C0	MWD

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
2,076.00	2,076.00	9 5/8" Casing Pt.	9-5/8	13-1/2

Plan Report for Montezuma 4-64 18-13 4H (Re-Stake) - Rev C0

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,766.30	1,766.30	Fox Hills			
1,874.30	1,874.30	Pierre Shale			
2,074.30	2,074.30	Surface Casing			
7,557.06	7,440.30	Sharon Springs			
7,744.29	7,582.30	Niobrara			
7,853.01	7,644.30	Niobrara B			
7,988.58	7,696.30	Niobrara C			

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Montezuma 4-64 18-13 4H_SL	0.00	0.01	0.00	Polygon
Montezuma 4-64 18-13 4H_SB	0.00	0.01	0.00	Polygon
Montezuma 4-64 18-13 4H_SHL	0.00	0.02	0.00	Point
Montezuma 4-64 18-13 4H_Rev C0_BHL Tgt	7,798.00	374.35	-6,716.06	Point
Montezuma 4-64 18-13 4H_Rev C0_EPI	7,798.00	372.30	-6,580.83	Point

Directional Difficulty Index

Average Dogleg over Survey:	0.77 °/100usft	Maximum Dogleg over Survey:	10.00 °/100usft at 8,140.41 usft
Net Tortousity applicable to Plans:	0.77 °/100usft	Directional Difficulty Index:	6.378

Audit Info

**North Reference Sheet for Sec. 18-T4S-R64W - Montezuma 4-64 18-13 4H
 (Re-Stake) - Plan C**

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference .
 Vertical Depths are relative to KB 24 ft @ 5715.80usft (Unknown). Northing and Easting are relative to Montezuma 4-64 18-13 4H (Re-Stake)
 Coordinate System is US State Plane 1983, Colorado Central Zone using datum North American Datum 1983, ellipsoid GRS 1980
 Projection method is Lambert Conformal Conic (2 parallel)
 Central Meridian is -105.50°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:39° 45' 0.000 N°
 False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99998992

Grid Coordinates of Well: 1,679,994.65 usft N, 3,256,721.22 usft E
 Geographical Coordinates of Well: 39° 41' 48.65" N, 104° 35' 15.61" W
 Grid Convergence at Surface is: 0.58°

Based upon Minimum Curvature type calculations, at a Measured Depth of 15,187.54usft
 the Bottom Hole Displacement is 6,726.48usft in the Direction of 273.19° (True).
 Magnetic Convergence at surface is: -7.65° (5 April 2016, , BGGM2014)

