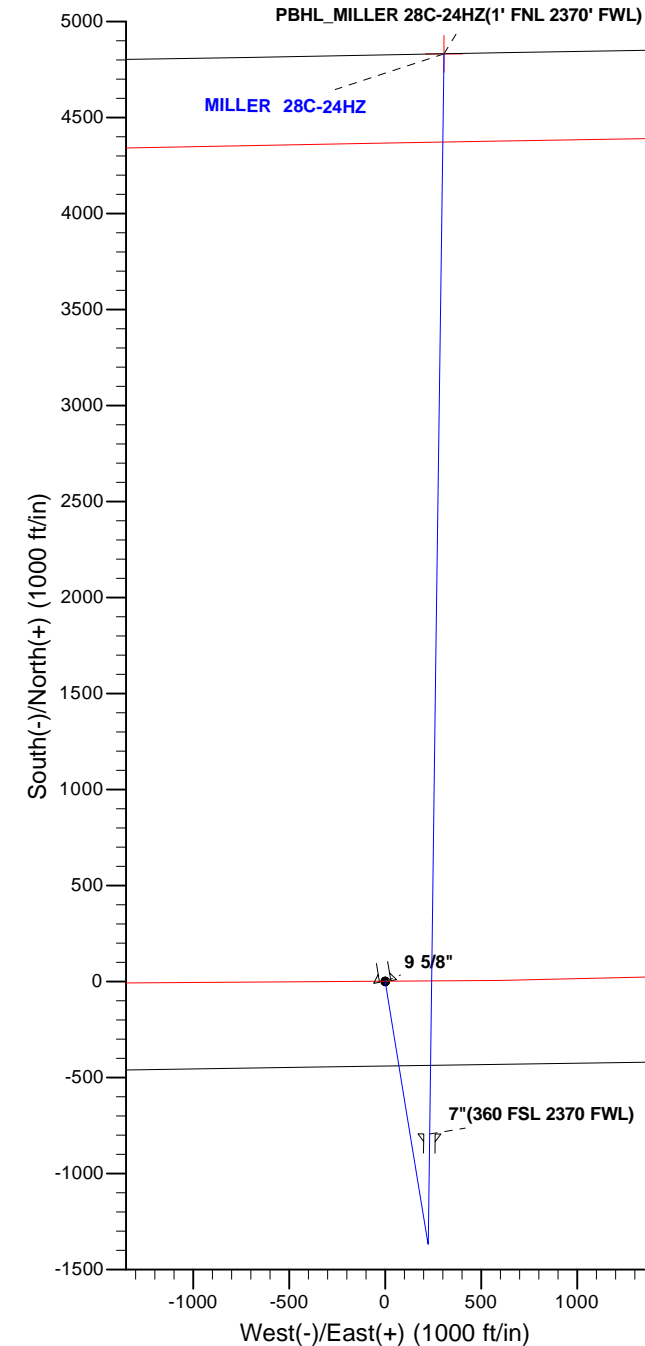
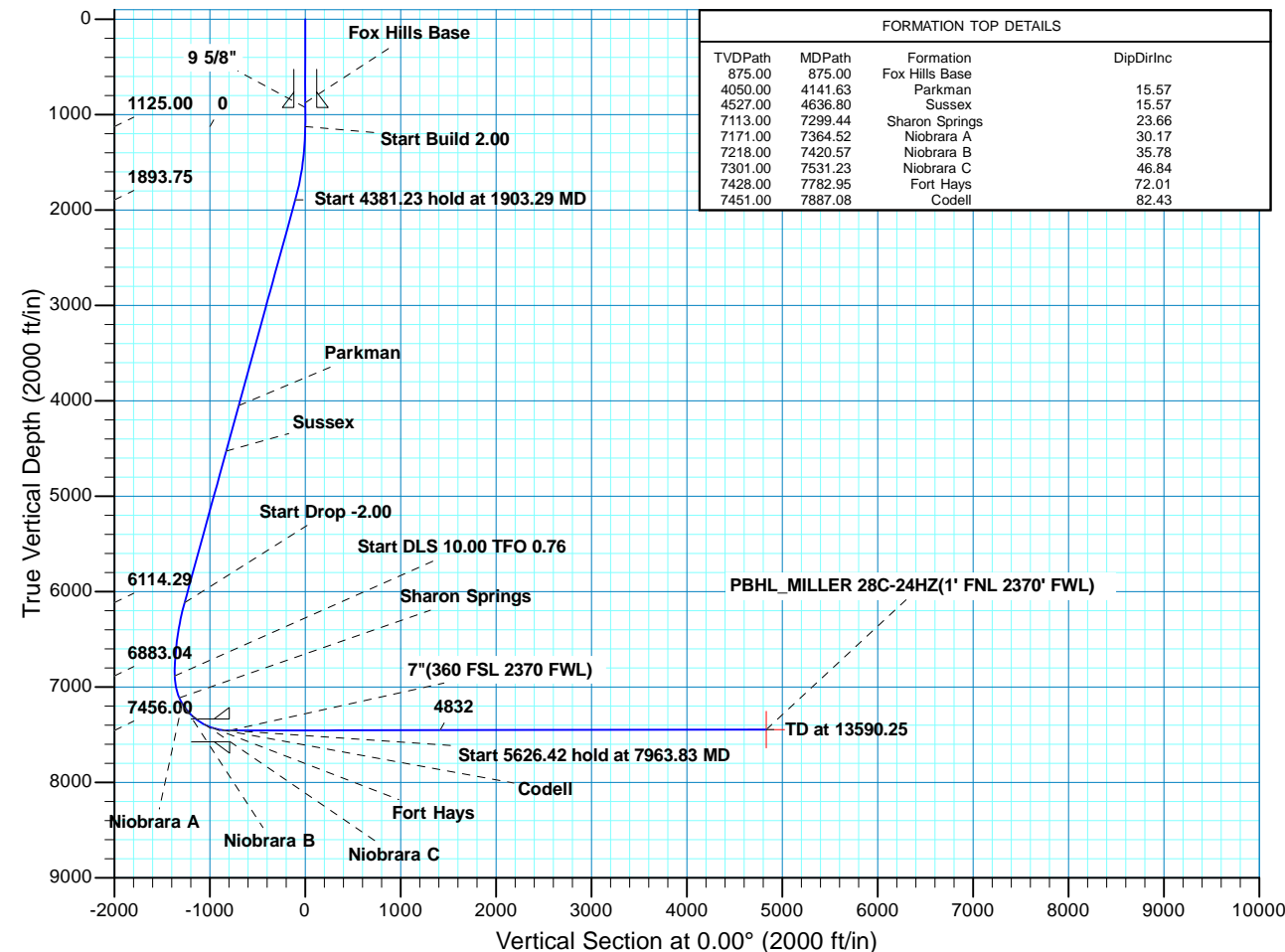


WELL DETAILS: MILLER 28C-24HZ																			
GL 5029 & KB 17 @ 5046.00ft (ASSUMED)																			
+N/-S 0.00		+E/-W 0.00		Northing 1318374.79		Easting 3215804.13		Latitude 40.2047550		Longitude -104.7273640									
SECTION DETAILS																			
MD		Inc		Azi		TVD		+N/-S		+E/-W		Dleg		TFace		VSect		Target	
0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00			
1125.00		0.00		0.00		1125.00		0.00		0.00		0.00		0.00		0.00			
1903.29		15.57		170.70		1893.75		-103.69		16.98		2.00		170.70		-103.69			
6284.52		15.57		170.70		6114.29		-1263.91		207.02		0.00		0.00		-1263.91			
7062.81		0.00		0.00		6883.04		-1367.60		224.00		2.00		180.00		-1367.60			
7963.83		90.10		0.76		7456.00		-793.67		231.62		10.00		0.76		-793.67			
13590.25		90.10		0.76		7446.00		4832.24		306.35		0.00		0.00		4832.24		PBHL_MILLER 28C-24HZ(1' FNL 2370' FWL)	
DESIGN TARGET DETAILS												CASING DET							
Name		TVD		+N/-S		+E/-W		Northing		Easting		Latitude		Longitude		Shape		Point	
PBHL		7446.00		4832.24		306.35		1323209.51		3216068.36		40.2180200		-104.7262670					
- plan hits target center												TVD 925.00 7456.00		MD 925.00 7963.83					





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

MILLER 14-24HZ

MILLER 28C-24HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

04 April, 2014

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well MILLER 28C-24HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5029 & KB 17 @ 5046.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5029 & KB 17 @ 5046.00ft (ASSUMED)
Site:	MILLER 14-24HZ	North Reference:	True
Well:	MILLER 28C-24HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Project	COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		MILLER 14-24HZ, SESW SECTION 24 T3N R66W			
Site Position:		Northing:	1,318,374.53 usft	Latitude:	40.2047550
From:	Lat/Long	Easting:	3,215,774.24 usft	Longitude:	-104.7274710
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.50 °

Well	MILLER 28C-24HZ, 458' FSL 2111' FWL					
Well Position	+N/-S	0.00 ft	Northing:	1,318,374.79 usft	Latitude:	40.2047550
	+E/-W	29.89 ft	Easting:	3,215,804.13 usft	Longitude:	-104.7273640
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	5,029.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	10/09/13	8.55	66.81	52,714

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

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,125.00	0.00	0.00	1,125.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,903.29	15.57	170.70	1,893.75	-103.69	16.98	2.00	2.00	0.00	170.70	
6,284.52	15.57	170.70	6,114.29	-1,263.91	207.02	0.00	0.00	0.00	0.00	
7,062.81	0.00	0.00	6,883.04	-1,367.60	224.00	2.00	-2.00	0.00	180.00	
7,963.83	90.10	0.76	7,456.00	-793.67	231.62	10.00	10.00	0.08	0.76	
13,590.25	90.10	0.76	7,446.00	4,832.24	306.35	0.00	0.00	0.00	0.00	PBHL_MILLER 28C-2

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well MILLER 28C-24HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5029 & KB 17 @ 5046.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5029 & KB 17 @ 5046.00ft (ASSUMED)
Site:	MILLER 14-24HZ	North Reference:	True
Well:	MILLER 28C-24HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
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
200.00	0.00	0.00	200.00	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
400.00	0.00	0.00	400.00	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
600.00	0.00	0.00	600.00	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
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
875.00	0.00	0.00	875.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Base									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
925.00	0.00	0.00	925.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
1,000.00	0.00	0.00	1,000.00	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
1,125.00	0.00	0.00	1,125.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,200.00	1.50	170.70	1,199.99	-0.97	0.16	-0.97	2.00	2.00	0.00
1,300.00	3.50	170.70	1,299.89	-5.27	0.86	-5.27	2.00	2.00	0.00
1,400.00	5.50	170.70	1,399.58	-13.02	2.13	-13.02	2.00	2.00	0.00
1,500.00	7.50	170.70	1,498.93	-24.19	3.96	-24.19	2.00	2.00	0.00
1,600.00	9.50	170.70	1,597.83	-38.77	6.35	-38.77	2.00	2.00	0.00
1,700.00	11.50	170.70	1,696.15	-56.76	9.30	-56.76	2.00	2.00	0.00
1,800.00	13.50	170.70	1,793.77	-78.11	12.79	-78.11	2.00	2.00	0.00
1,900.00	15.50	170.70	1,890.58	-102.82	16.84	-102.82	2.00	2.00	0.00
1,903.29	15.57	170.70	1,893.75	-103.69	16.98	-103.69	2.00	2.00	0.00
Start 4381.23 hold at 1903.29 MD									
2,000.00	15.57	170.70	1,986.91	-129.30	21.18	-129.30	0.00	0.00	0.00
2,100.00	15.57	170.70	2,083.25	-155.78	25.52	-155.78	0.00	0.00	0.00
2,200.00	15.57	170.70	2,179.58	-182.26	29.85	-182.26	0.00	0.00	0.00
2,300.00	15.57	170.70	2,275.91	-208.75	34.19	-208.75	0.00	0.00	0.00
2,400.00	15.57	170.70	2,372.24	-235.23	38.53	-235.23	0.00	0.00	0.00
2,500.00	15.57	170.70	2,468.58	-261.71	42.87	-261.71	0.00	0.00	0.00
2,600.00	15.57	170.70	2,564.91	-288.19	47.20	-288.19	0.00	0.00	0.00
2,700.00	15.57	170.70	2,661.24	-314.67	51.54	-314.67	0.00	0.00	0.00
2,800.00	15.57	170.70	2,757.57	-341.15	55.88	-341.15	0.00	0.00	0.00
2,900.00	15.57	170.70	2,853.91	-367.64	60.22	-367.64	0.00	0.00	0.00
3,000.00	15.57	170.70	2,950.24	-394.12	64.55	-394.12	0.00	0.00	0.00
3,100.00	15.57	170.70	3,046.57	-420.60	68.89	-420.60	0.00	0.00	0.00
3,200.00	15.57	170.70	3,142.90	-447.08	73.23	-447.08	0.00	0.00	0.00
3,300.00	15.57	170.70	3,239.23	-473.56	77.56	-473.56	0.00	0.00	0.00
3,400.00	15.57	170.70	3,335.57	-500.04	81.90	-500.04	0.00	0.00	0.00
3,500.00	15.57	170.70	3,431.90	-526.52	86.24	-526.52	0.00	0.00	0.00
3,600.00	15.57	170.70	3,528.23	-553.01	90.58	-553.01	0.00	0.00	0.00
3,700.00	15.57	170.70	3,624.56	-579.49	94.91	-579.49	0.00	0.00	0.00
3,800.00	15.57	170.70	3,720.90	-605.97	99.25	-605.97	0.00	0.00	0.00
3,900.00	15.57	170.70	3,817.23	-632.45	103.59	-632.45	0.00	0.00	0.00
4,000.00	15.57	170.70	3,913.56	-658.93	107.93	-658.93	0.00	0.00	0.00
4,100.00	15.57	170.70	4,009.89	-685.41	112.26	-685.41	0.00	0.00	0.00
4,141.63	15.57	170.70	4,050.00	-696.44	114.07	-696.44	0.00	0.00	0.00
Parkman									
4,200.00	15.57	170.70	4,106.22	-711.90	116.60	-711.90	0.00	0.00	0.00
4,300.00	15.57	170.70	4,202.56	-738.38	120.94	-738.38	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well MILLER 28C-24HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5029 & KB 17 @ 5046.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5029 & KB 17 @ 5046.00ft (ASSUMED)
Site:	MILLER 14-24HZ	North Reference:	True
Well:	MILLER 28C-24HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,400.00	15.57	170.70	4,298.89	-764.86	125.28	-764.86	0.00	0.00	0.00
4,500.00	15.57	170.70	4,395.22	-791.34	129.61	-791.34	0.00	0.00	0.00
4,600.00	15.57	170.70	4,491.55	-817.82	133.95	-817.82	0.00	0.00	0.00
4,636.80	15.57	170.70	4,527.00	-827.57	135.55	-827.57	0.00	0.00	0.00
Sussex									
4,700.00	15.57	170.70	4,587.89	-844.30	138.29	-844.30	0.00	0.00	0.00
4,800.00	15.57	170.70	4,684.22	-870.79	142.63	-870.79	0.00	0.00	0.00
4,900.00	15.57	170.70	4,780.55	-897.27	146.96	-897.27	0.00	0.00	0.00
5,000.00	15.57	170.70	4,876.88	-923.75	151.30	-923.75	0.00	0.00	0.00
5,100.00	15.57	170.70	4,973.22	-950.23	155.64	-950.23	0.00	0.00	0.00
5,200.00	15.57	170.70	5,069.55	-976.71	159.98	-976.71	0.00	0.00	0.00
5,300.00	15.57	170.70	5,165.88	-1,003.19	164.31	-1,003.19	0.00	0.00	0.00
5,400.00	15.57	170.70	5,262.21	-1,029.68	168.65	-1,029.68	0.00	0.00	0.00
5,500.00	15.57	170.70	5,358.54	-1,056.16	172.99	-1,056.16	0.00	0.00	0.00
5,600.00	15.57	170.70	5,454.88	-1,082.64	177.33	-1,082.64	0.00	0.00	0.00
5,700.00	15.57	170.70	5,551.21	-1,109.12	181.66	-1,109.12	0.00	0.00	0.00
5,800.00	15.57	170.70	5,647.54	-1,135.60	186.00	-1,135.60	0.00	0.00	0.00
5,900.00	15.57	170.70	5,743.87	-1,162.08	190.34	-1,162.08	0.00	0.00	0.00
6,000.00	15.57	170.70	5,840.21	-1,188.56	194.68	-1,188.56	0.00	0.00	0.00
6,100.00	15.57	170.70	5,936.54	-1,215.05	199.01	-1,215.05	0.00	0.00	0.00
6,200.00	15.57	170.70	6,032.87	-1,241.53	203.35	-1,241.53	0.00	0.00	0.00
6,284.52	15.57	170.70	6,114.29	-1,263.91	207.02	-1,263.91	0.00	0.00	0.00
Start Drop -2.00									
6,300.00	15.26	170.70	6,129.21	-1,267.97	207.68	-1,267.97	2.00	-2.00	0.00
6,400.00	13.26	170.70	6,226.13	-1,292.27	211.66	-1,292.27	2.00	-2.00	0.00
6,500.00	11.26	170.70	6,323.85	-1,313.22	215.09	-1,313.22	2.00	-2.00	0.00
6,600.00	9.26	170.70	6,422.24	-1,330.79	217.97	-1,330.79	2.00	-2.00	0.00
6,700.00	7.26	170.70	6,521.20	-1,344.96	220.29	-1,344.96	2.00	-2.00	0.00
6,800.00	5.26	170.70	6,620.60	-1,355.71	222.05	-1,355.71	2.00	-2.00	0.00
6,900.00	3.26	170.70	6,720.32	-1,363.04	223.25	-1,363.04	2.00	-2.00	0.00
7,000.00	1.26	170.70	6,820.24	-1,366.92	223.89	-1,366.92	2.00	-2.00	0.00
7,062.81	0.00	0.00	6,883.04	-1,367.60	224.00	-1,367.60	2.00	-2.00	0.00
Start DLS 10.00 TFO 0.76									
7,100.00	3.72	0.76	6,920.21	-1,366.39	224.02	-1,366.39	10.00	10.00	0.00
7,200.00	13.72	0.76	7,018.93	-1,351.25	224.22	-1,351.25	10.00	10.00	0.00
7,299.44	23.66	0.76	7,113.00	-1,319.43	224.64	-1,319.43	10.00	10.00	0.00
Sharon Springs									
7,300.00	23.72	0.76	7,113.52	-1,319.21	224.64	-1,319.21	10.00	10.00	0.00
7,364.52	30.17	0.76	7,171.00	-1,289.99	225.03	-1,289.99	10.00	10.00	0.00
Niobrara A									
7,400.00	33.72	0.76	7,201.10	-1,271.22	225.28	-1,271.22	10.00	10.00	0.00
7,420.57	35.78	0.76	7,218.00	-1,259.50	225.44	-1,259.50	10.00	10.00	0.00
Niobrara B									
7,500.00	43.72	0.76	7,279.03	-1,208.75	226.11	-1,208.75	10.00	10.00	0.00
7,531.23	46.84	0.76	7,301.00	-1,186.56	226.40	-1,186.56	10.00	10.00	0.00
Niobrara C									
7,600.00	53.72	0.76	7,344.92	-1,133.71	227.11	-1,133.71	10.00	10.00	0.00
7,700.00	63.72	0.76	7,396.77	-1,048.36	228.24	-1,048.36	10.00	10.00	0.00
7,782.95	72.01	0.76	7,428.00	-971.59	229.26	-971.59	10.00	10.00	0.00
Fort Hays									
7,800.00	73.72	0.76	7,433.02	-955.30	229.48	-955.30	10.00	10.00	0.00
7,887.08	82.43	0.76	7,451.00	-870.20	230.61	-870.20	10.00	10.00	0.00
Codell									

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well MILLER 28C-24HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5029 & KB 17 @ 5046.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5029 & KB 17 @ 5046.00ft (ASSUMED)
Site:	MILLER 14-24HZ	North Reference:	True
Well:	MILLER 28C-24HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,900.00	83.72	0.76	7,452.56	-857.37	230.78	-857.37	10.00	10.00	0.00
7,963.83	90.10	0.76	7,456.00	-793.67	231.62	-793.67	10.00	10.00	0.00
Start 5626.42 hold at 7963.83 MD - 7"(360 FSL 2370 FWL)									
8,000.00	90.10	0.76	7,455.93	-757.50	232.10	-757.50	0.00	0.00	0.00
8,100.00	90.10	0.76	7,455.76	-657.51	233.43	-657.51	0.00	0.00	0.00
8,200.00	90.10	0.76	7,455.58	-557.52	234.76	-557.52	0.00	0.00	0.00
8,300.00	90.10	0.76	7,455.40	-457.53	236.09	-457.53	0.00	0.00	0.00
8,400.00	90.10	0.76	7,455.22	-357.54	237.42	-357.54	0.00	0.00	0.00
8,500.00	90.10	0.76	7,455.04	-257.55	238.74	-257.55	0.00	0.00	0.00
8,600.00	90.10	0.76	7,454.87	-157.56	240.07	-157.56	0.00	0.00	0.00
8,700.00	90.10	0.76	7,454.69	-57.57	241.40	-57.57	0.00	0.00	0.00
8,800.00	90.10	0.76	7,454.51	42.42	242.73	42.42	0.00	0.00	0.00
8,900.00	90.10	0.76	7,454.33	142.42	244.06	142.42	0.00	0.00	0.00
9,000.00	90.10	0.76	7,454.16	242.41	245.38	242.41	0.00	0.00	0.00
9,100.00	90.10	0.76	7,453.98	342.40	246.71	342.40	0.00	0.00	0.00
9,200.00	90.10	0.76	7,453.80	442.39	248.04	442.39	0.00	0.00	0.00
9,300.00	90.10	0.76	7,453.62	542.38	249.37	542.38	0.00	0.00	0.00
9,400.00	90.10	0.76	7,453.45	642.37	250.70	642.37	0.00	0.00	0.00
9,500.00	90.10	0.76	7,453.27	742.36	252.02	742.36	0.00	0.00	0.00
9,600.00	90.10	0.76	7,453.09	842.35	253.35	842.35	0.00	0.00	0.00
9,700.00	90.10	0.76	7,452.91	942.34	254.68	942.34	0.00	0.00	0.00
9,800.00	90.10	0.76	7,452.73	1,042.33	256.01	1,042.33	0.00	0.00	0.00
9,900.00	90.10	0.76	7,452.56	1,142.33	257.34	1,142.33	0.00	0.00	0.00
10,000.00	90.10	0.76	7,452.38	1,242.32	258.67	1,242.32	0.00	0.00	0.00
10,100.00	90.10	0.76	7,452.20	1,342.31	259.99	1,342.31	0.00	0.00	0.00
10,200.00	90.10	0.76	7,452.02	1,442.30	261.32	1,442.30	0.00	0.00	0.00
10,300.00	90.10	0.76	7,451.85	1,542.29	262.65	1,542.29	0.00	0.00	0.00
10,400.00	90.10	0.76	7,451.67	1,642.28	263.98	1,642.28	0.00	0.00	0.00
10,500.00	90.10	0.76	7,451.49	1,742.27	265.31	1,742.27	0.00	0.00	0.00
10,600.00	90.10	0.76	7,451.31	1,842.26	266.63	1,842.26	0.00	0.00	0.00
10,700.00	90.10	0.76	7,451.14	1,942.25	267.96	1,942.25	0.00	0.00	0.00
10,800.00	90.10	0.76	7,450.96	2,042.24	269.29	2,042.24	0.00	0.00	0.00
10,900.00	90.10	0.76	7,450.78	2,142.24	270.62	2,142.24	0.00	0.00	0.00
11,000.00	90.10	0.76	7,450.60	2,242.23	271.95	2,242.23	0.00	0.00	0.00
11,100.00	90.10	0.76	7,450.42	2,342.22	273.27	2,342.22	0.00	0.00	0.00
11,200.00	90.10	0.76	7,450.25	2,442.21	274.60	2,442.21	0.00	0.00	0.00
11,300.00	90.10	0.76	7,450.07	2,542.20	275.93	2,542.20	0.00	0.00	0.00
11,400.00	90.10	0.76	7,449.89	2,642.19	277.26	2,642.19	0.00	0.00	0.00
11,500.00	90.10	0.76	7,449.71	2,742.18	278.59	2,742.18	0.00	0.00	0.00
11,600.00	90.10	0.76	7,449.54	2,842.17	279.91	2,842.17	0.00	0.00	0.00
11,700.00	90.10	0.76	7,449.36	2,942.16	281.24	2,942.16	0.00	0.00	0.00
11,800.00	90.10	0.76	7,449.18	3,042.16	282.57	3,042.16	0.00	0.00	0.00
11,900.00	90.10	0.76	7,449.00	3,142.15	283.90	3,142.15	0.00	0.00	0.00
12,000.00	90.10	0.76	7,448.83	3,242.14	285.23	3,242.14	0.00	0.00	0.00
12,100.00	90.10	0.76	7,448.65	3,342.13	286.55	3,342.13	0.00	0.00	0.00
12,200.00	90.10	0.76	7,448.47	3,442.12	287.88	3,442.12	0.00	0.00	0.00
12,300.00	90.10	0.76	7,448.29	3,542.11	289.21	3,542.11	0.00	0.00	0.00
12,400.00	90.10	0.76	7,448.11	3,642.10	290.54	3,642.10	0.00	0.00	0.00
12,500.00	90.10	0.76	7,447.94	3,742.09	291.87	3,742.09	0.00	0.00	0.00
12,600.00	90.10	0.76	7,447.76	3,842.08	293.20	3,842.08	0.00	0.00	0.00
12,700.00	90.10	0.76	7,447.58	3,942.07	294.52	3,942.07	0.00	0.00	0.00
12,800.00	90.10	0.76	7,447.40	4,042.07	295.85	4,042.07	0.00	0.00	0.00
12,900.00	90.10	0.76	7,447.23	4,142.06	297.18	4,142.06	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well MILLER 28C-24HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5029 & KB 17 @ 5046.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5029 & KB 17 @ 5046.00ft (ASSUMED)
Site:	MILLER 14-24HZ	North Reference:	True
Well:	MILLER 28C-24HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
13,000.00	90.10	0.76	7,447.05	4,242.05	298.51	4,242.05	0.00	0.00	0.00
13,100.00	90.10	0.76	7,446.87	4,342.04	299.84	4,342.04	0.00	0.00	0.00
13,200.00	90.10	0.76	7,446.69	4,442.03	301.16	4,442.03	0.00	0.00	0.00
13,300.00	90.10	0.76	7,446.52	4,542.02	302.49	4,542.02	0.00	0.00	0.00
13,400.00	90.10	0.76	7,446.34	4,642.01	303.82	4,642.01	0.00	0.00	0.00
13,500.00	90.10	0.76	7,446.16	4,742.00	305.15	4,742.00	0.00	0.00	0.00
13,590.25	90.10	0.76	7,446.00	4,832.24	306.35	4,832.24	0.00	0.00	0.00
TD at 13590.25 - PBHL_MILLER 28C-24HZ(1' FNL 2370' FWL)									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL_MILLER 28C-24H	0.00	0.00	7,446.00	4,832.24	306.35	1,323,209.51	3,216,068.36	40.2180200	-104.7262670
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
925.00	925.00	9 5/8"	9.625	12.250	
7,963.83	7,456.00	7"(360 FSL 2370 FWL)	7.000	7.500	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
875.00	875.00	Fox Hills Base				
4,141.63	4,050.00	Parkman				
4,636.80	4,527.00	Sussex				
7,299.44	7,113.00	Sharon Springs				
7,364.52	7,171.00	Niobrara A				
7,420.57	7,218.00	Niobrara B				
7,531.23	7,301.00	Niobrara C				
7,782.95	7,428.00	Fort Hays				
7,887.08	7,451.00	Codell				

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well MILLER 28C-24HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5029 & KB 17 @ 5046.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5029 & KB 17 @ 5046.00ft (ASSUMED)
Site:	MILLER 14-24HZ	North Reference:	True
Well:	MILLER 28C-24HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,125.00	1,125.00	0.00	0.00	Start Build 2.00
1,903.29	1,893.75	-103.69	16.98	Start 4381.23 hold at 1903.29 MD
6,284.52	6,114.29	-1,263.91	207.02	Start Drop -2.00
7,062.81	6,883.04	-1,367.60	224.00	Start DLS 10.00 TFO 0.76
7,963.83	7,456.00	-793.67	231.62	Start 5626.42 hold at 7963.83 MD
13,590.25	7,446.00	4,832.24	306.35	TD at 13590.25