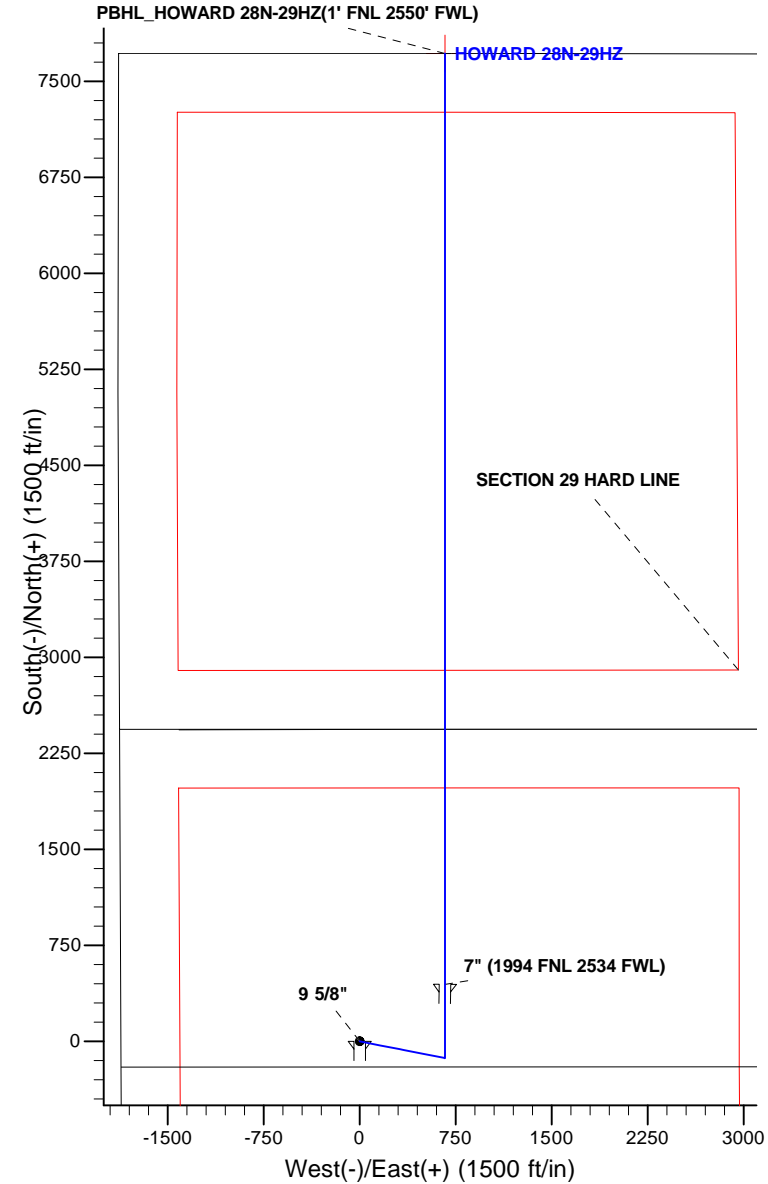
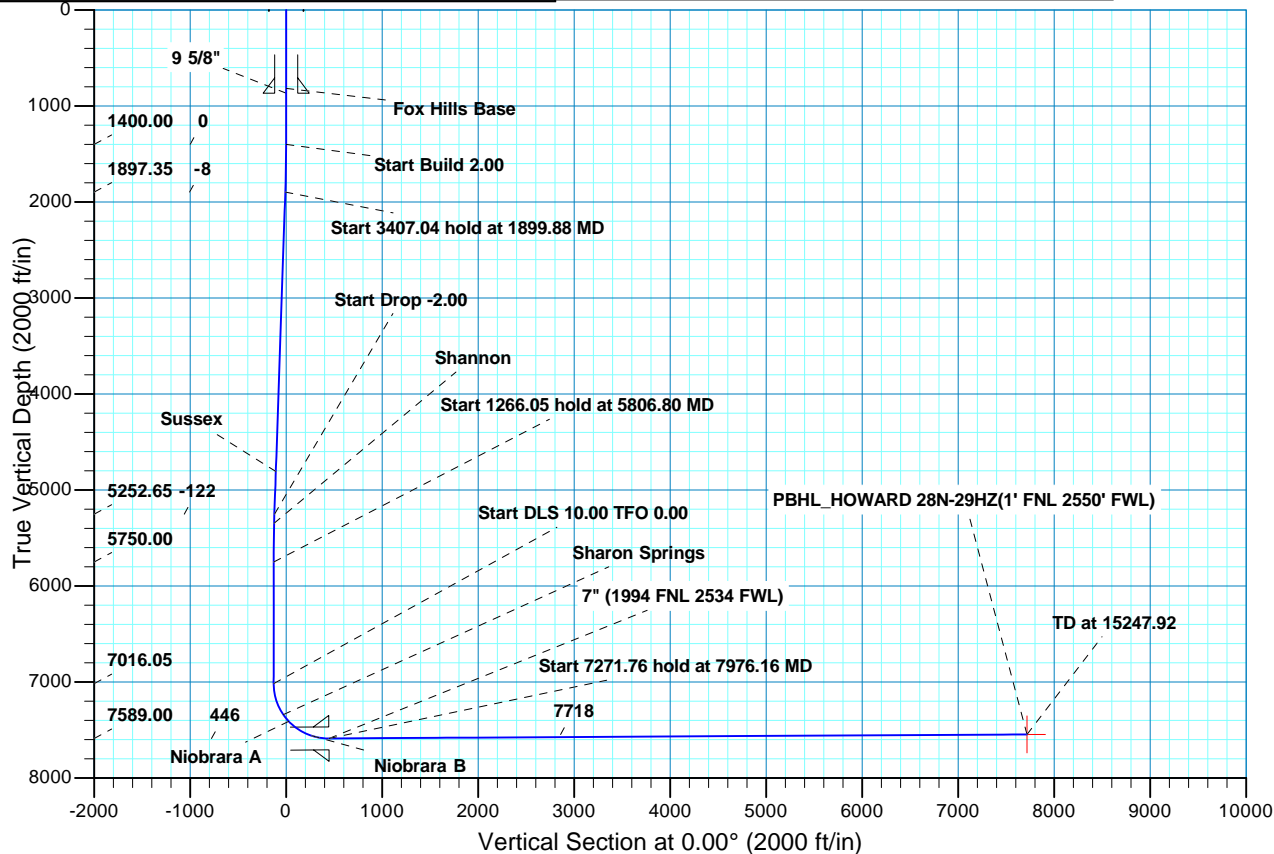


WELL DETAILS: HOWARD 28N-29HZ									
GL 5050' & KB 17' @ 5067.00ft (ASSUMED)									
		+N/-S 0.00	+E/-W 0.00	Northing 1246347.61	Easting 3163285.07	Latitude 40.0081370	Longitude -104.9170850		
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00	0.00	
1899.88	10.00	101.05	1897.35	-8.34	42.70	2.00	101.05	-8.33	
5306.92	10.00	101.05	5252.65	-121.66	623.22	0.00	0.00	-121.61	
5806.80	0.00	0.00	5750.00	-130.00	665.92	2.00	180.00	-129.94	
7072.85	0.00	0.00	7016.05	-130.00	665.92	0.00	0.00	-129.94	
7976.16	90.33	0.00	7589.00	446.27	665.92	10.00	0.00	446.33	
15247.92	90.33	0.00	7547.00	7717.91	665.92	0.00	0.007717.97	PBHL_HOWARD 28N-29HZ(1' FNL 2550' FWL)	
FORMATION TOP DETAILS						CASING DETAILS			
TVDPath	MDPath	Formation	Inc			TVD	MD	Name	Size
816.00	816.00	Fox Hills Base	0.00			866.00	866.00	9 5/8"	9.625
4806.00	4853.38	Sussex	10.00			7589.00	7976.16	7"	7.000
5346.00	5401.45	Shannon	8.11						
7340.00	7417.15	Sharon Springs	34.43						
7410.00	7507.23	Niobrara A	43.44						
7561.00	7792.96	Niobrara B	72.01						





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

HOWARD 6-32HZ

HOWARD 28N-29HZ

OH

Plan: PLAN #2 PRELIMINARY

Standard Planning Report

18 July, 2013

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well HOWARD 28N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5050' & KB 17' @ 5067.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5050' & KB 17' @ 5067.00ft (ASSUMED)
Site:	HOWARD 6-32HZ	North Reference:	True
Well:	HOWARD 28N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2 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	HOWARD 6-32HZ, SECTION 32 T1N R67W			
Site Position:		Northing:	1,246,347.22 usft	Latitude: 40.0081370
From:	Lat/Long	Easting:	3,163,224.85 usft	Longitude: -104.9173000
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: 0.38 °

Well	HOWARD 28N-29HZ, 2439 FNL 1865 FWL			
Well Position	+N/-S	-0.01 ft	Northing:	1,246,347.61 usft
	+E/-W	60.23 ft	Easting:	3,163,285.07 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Ground Level: 5,050.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	2013/04/08	8.72	66.62	52,620

Design	PLAN #2 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	0.01

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	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,899.88	10.00	101.05	1,897.35	-8.34	42.70	2.00	2.00	0.00	101.05	
5,306.92	10.00	101.05	5,252.65	-121.66	623.22	0.00	0.00	0.00	0.00	
5,806.80	0.00	0.00	5,750.00	-130.00	665.92	2.00	-2.00	0.00	180.00	
7,072.85	0.00	0.00	7,016.05	-130.00	665.92	0.00	0.00	0.00	0.00	
7,976.16	90.33	0.00	7,589.00	446.27	665.92	10.00	10.00	0.00	0.00	
15,247.92	90.33	0.00	7,547.00	7,717.91	665.92	0.00	0.00	0.00	0.00	PBHL_HOWARD 28N

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well HOWARD 28N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5050' & KB 17' @ 5067.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5050' & KB 17' @ 5067.00ft (ASSUMED)
Site:	HOWARD 6-32HZ	North Reference:	True
Well:	HOWARD 28N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2 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
816.00	0.00	0.00	816.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Base									
866.00	0.00	0.00	866.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
900.00	0.00	0.00	900.00	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
1,100.00	0.00	0.00	1,100.00	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
1,300.00	0.00	0.00	1,300.00	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
Start Build 2.00									
1,500.00	2.00	101.05	1,499.98	-0.33	1.71	-0.33	2.00	2.00	0.00
1,600.00	4.00	101.05	1,599.84	-1.34	6.85	-1.34	2.00	2.00	0.00
1,700.00	6.00	101.05	1,699.45	-3.01	15.40	-3.01	2.00	2.00	0.00
1,800.00	8.00	101.05	1,798.70	-5.34	27.36	-5.34	2.00	2.00	0.00
1,899.88	10.00	101.05	1,897.35	-8.34	42.70	-8.33	2.00	2.00	0.00
Start 3407.04 hold at 1899.88 MD									
1,900.00	10.00	101.05	1,897.47	-8.34	42.72	-8.34	0.00	0.00	0.00
2,000.00	10.00	101.05	1,995.95	-11.67	59.76	-11.66	0.00	0.00	0.00
2,100.00	10.00	101.05	2,094.43	-14.99	76.79	-14.98	0.00	0.00	0.00
2,200.00	10.00	101.05	2,192.91	-18.32	93.83	-18.31	0.00	0.00	0.00
2,300.00	10.00	101.05	2,291.39	-21.64	110.87	-21.63	0.00	0.00	0.00
2,400.00	10.00	101.05	2,389.87	-24.97	127.91	-24.96	0.00	0.00	0.00
2,500.00	10.00	101.05	2,488.35	-28.30	144.95	-28.28	0.00	0.00	0.00
2,600.00	10.00	101.05	2,586.84	-31.62	161.99	-31.61	0.00	0.00	0.00
2,700.00	10.00	101.05	2,685.32	-34.95	179.03	-34.93	0.00	0.00	0.00
2,800.00	10.00	101.05	2,783.80	-38.28	196.07	-38.26	0.00	0.00	0.00
2,900.00	10.00	101.05	2,882.28	-41.60	213.11	-41.58	0.00	0.00	0.00
3,000.00	10.00	101.05	2,980.76	-44.93	230.15	-44.91	0.00	0.00	0.00
3,100.00	10.00	101.05	3,079.24	-48.26	247.19	-48.23	0.00	0.00	0.00
3,200.00	10.00	101.05	3,177.72	-51.58	264.22	-51.56	0.00	0.00	0.00
3,300.00	10.00	101.05	3,276.21	-54.91	281.26	-54.88	0.00	0.00	0.00
3,400.00	10.00	101.05	3,374.69	-58.23	298.30	-58.21	0.00	0.00	0.00
3,500.00	10.00	101.05	3,473.17	-61.56	315.34	-61.53	0.00	0.00	0.00
3,600.00	10.00	101.05	3,571.65	-64.89	332.38	-64.86	0.00	0.00	0.00
3,700.00	10.00	101.05	3,670.13	-68.21	349.42	-68.18	0.00	0.00	0.00
3,800.00	10.00	101.05	3,768.61	-71.54	366.46	-71.51	0.00	0.00	0.00
3,900.00	10.00	101.05	3,867.10	-74.87	383.50	-74.83	0.00	0.00	0.00
4,000.00	10.00	101.05	3,965.58	-78.19	400.54	-78.16	0.00	0.00	0.00
4,100.00	10.00	101.05	4,064.06	-81.52	417.58	-81.48	0.00	0.00	0.00
4,200.00	10.00	101.05	4,162.54	-84.84	434.62	-84.81	0.00	0.00	0.00
4,300.00	10.00	101.05	4,261.02	-88.17	451.65	-88.13	0.00	0.00	0.00
4,400.00	10.00	101.05	4,359.50	-91.50	468.69	-91.46	0.00	0.00	0.00
4,500.00	10.00	101.05	4,457.98	-94.82	485.73	-94.78	0.00	0.00	0.00
4,600.00	10.00	101.05	4,556.47	-98.15	502.77	-98.11	0.00	0.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well HOWARD 28N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5050' & KB 17' @ 5067.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5050' & KB 17' @ 5067.00ft (ASSUMED)
Site:	HOWARD 6-32HZ	North Reference:	True
Well:	HOWARD 28N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2 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)
4,700.00	10.00	101.05	4,654.95	-101.48	519.81	-101.43	0.00	0.00	0.00
4,800.00	10.00	101.05	4,753.43	-104.80	536.85	-104.76	0.00	0.00	0.00
4,853.38	10.00	101.05	4,806.00	-106.58	545.95	-106.53	0.00	0.00	0.00
Sussex									
4,900.00	10.00	101.05	4,851.91	-108.13	553.89	-108.08	0.00	0.00	0.00
5,000.00	10.00	101.05	4,950.39	-111.46	570.93	-111.41	0.00	0.00	0.00
5,100.00	10.00	101.05	5,048.87	-114.78	587.97	-114.73	0.00	0.00	0.00
5,200.00	10.00	101.05	5,147.35	-118.11	605.01	-118.06	0.00	0.00	0.00
5,300.00	10.00	101.05	5,245.84	-121.43	622.04	-121.38	0.00	0.00	0.00
5,306.92	10.00	101.05	5,252.65	-121.66	623.22	-121.61	0.00	0.00	0.00
Start Drop -2.00									
5,400.00	8.14	101.05	5,344.56	-124.48	637.62	-124.42	2.00	-2.00	0.00
5,401.45	8.11	101.05	5,346.00	-124.51	637.82	-124.46	2.00	-2.00	0.00
Shannon									
5,500.00	6.14	101.05	5,443.78	-126.86	649.81	-126.80	2.00	-2.00	0.00
5,600.00	4.14	101.05	5,543.38	-128.57	658.60	-128.51	2.00	-2.00	0.00
5,700.00	2.14	101.05	5,643.22	-129.62	663.97	-129.56	2.00	-2.00	0.00
5,800.00	0.14	101.05	5,743.20	-130.00	665.91	-129.94	2.00	-2.00	0.00
5,806.80	0.00	0.00	5,750.00	-130.00	665.92	-129.94	2.00	-2.00	0.00
Start 1266.05 hold at 5806.80 MD									
5,900.00	0.00	0.00	5,843.20	-130.00	665.92	-129.94	0.00	0.00	0.00
6,000.00	0.00	0.00	5,943.20	-130.00	665.92	-129.94	0.00	0.00	0.00
6,100.00	0.00	0.00	6,043.20	-130.00	665.92	-129.94	0.00	0.00	0.00
6,200.00	0.00	0.00	6,143.20	-130.00	665.92	-129.94	0.00	0.00	0.00
6,300.00	0.00	0.00	6,243.20	-130.00	665.92	-129.94	0.00	0.00	0.00
6,400.00	0.00	0.00	6,343.20	-130.00	665.92	-129.94	0.00	0.00	0.00
6,500.00	0.00	0.00	6,443.20	-130.00	665.92	-129.94	0.00	0.00	0.00
6,600.00	0.00	0.00	6,543.20	-130.00	665.92	-129.94	0.00	0.00	0.00
6,700.00	0.00	0.00	6,643.20	-130.00	665.92	-129.94	0.00	0.00	0.00
6,800.00	0.00	0.00	6,743.20	-130.00	665.92	-129.94	0.00	0.00	0.00
6,900.00	0.00	0.00	6,843.20	-130.00	665.92	-129.94	0.00	0.00	0.00
7,000.00	0.00	0.00	6,943.20	-130.00	665.92	-129.94	0.00	0.00	0.00
7,072.85	0.00	0.00	7,016.05	-130.00	665.92	-129.94	0.00	0.00	0.00
Start DLS 10.00 TFO 0.00									
7,100.00	2.71	0.00	7,043.19	-129.36	665.92	-129.30	10.00	10.00	0.00
7,200.00	12.71	0.00	7,142.16	-115.95	665.92	-115.89	10.00	10.00	0.00
7,300.00	22.71	0.00	7,237.29	-85.56	665.92	-85.50	10.00	10.00	0.00
7,400.00	32.71	0.00	7,325.71	-39.11	665.92	-39.05	10.00	10.00	0.00
7,417.15	34.43	0.00	7,340.00	-29.63	665.92	-29.57	10.00	10.00	0.00
Sharon Springs									
7,500.00	42.71	0.00	7,404.72	21.98	665.92	22.04	10.00	10.00	0.00
7,507.23	43.44	0.00	7,410.00	26.92	665.92	26.98	10.00	10.00	0.00
Niobrara A									
7,600.00	52.71	0.00	7,471.91	95.87	665.92	95.93	10.00	10.00	0.00
7,700.00	62.71	0.00	7,525.26	180.30	665.92	180.36	10.00	10.00	0.00
7,792.96	72.01	0.00	7,561.00	266.01	665.92	266.07	10.00	10.00	0.00
Niobrara B									
7,800.00	72.71	0.00	7,563.13	272.72	665.92	272.77	10.00	10.00	0.00
7,900.00	82.71	0.00	7,584.38	370.30	665.92	370.36	10.00	10.00	0.00
7,976.16	90.33	0.00	7,589.00	446.27	665.92	446.32	10.00	10.00	0.00
Start 7271.76 hold at 7976.16 MD - 7" (1994 FNL 2534 FWL)									
8,000.00	90.33	0.00	7,588.86	470.11	665.92	470.16	0.00	0.00	0.00
8,100.00	90.33	0.00	7,588.28	570.10	665.92	570.16	0.00	0.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well HOWARD 28N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5050' & KB 17' @ 5067.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5050' & KB 17' @ 5067.00ft (ASSUMED)
Site:	HOWARD 6-32HZ	North Reference:	True
Well:	HOWARD 28N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2 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)
8,200.00	90.33	0.00	7,587.71	670.10	665.92	670.16	0.00	0.00	0.00
8,300.00	90.33	0.00	7,587.13	770.10	665.92	770.16	0.00	0.00	0.00
8,400.00	90.33	0.00	7,586.55	870.10	665.92	870.16	0.00	0.00	0.00
8,500.00	90.33	0.00	7,585.97	970.10	665.92	970.16	0.00	0.00	0.00
8,600.00	90.33	0.00	7,585.40	1,070.10	665.92	1,070.15	0.00	0.00	0.00
8,700.00	90.33	0.00	7,584.82	1,170.09	665.92	1,170.15	0.00	0.00	0.00
8,800.00	90.33	0.00	7,584.24	1,270.09	665.92	1,270.15	0.00	0.00	0.00
8,900.00	90.33	0.00	7,583.66	1,370.09	665.92	1,370.15	0.00	0.00	0.00
9,000.00	90.33	0.00	7,583.09	1,470.09	665.92	1,470.15	0.00	0.00	0.00
9,100.00	90.33	0.00	7,582.51	1,570.09	665.92	1,570.15	0.00	0.00	0.00
9,200.00	90.33	0.00	7,581.93	1,670.09	665.92	1,670.14	0.00	0.00	0.00
9,300.00	90.33	0.00	7,581.35	1,770.08	665.92	1,770.14	0.00	0.00	0.00
9,400.00	90.33	0.00	7,580.77	1,870.08	665.92	1,870.14	0.00	0.00	0.00
9,500.00	90.33	0.00	7,580.20	1,970.08	665.92	1,970.14	0.00	0.00	0.00
9,600.00	90.33	0.00	7,579.62	2,070.08	665.92	2,070.14	0.00	0.00	0.00
9,700.00	90.33	0.00	7,579.04	2,170.08	665.92	2,170.14	0.00	0.00	0.00
9,800.00	90.33	0.00	7,578.46	2,270.08	665.92	2,270.13	0.00	0.00	0.00
9,900.00	90.33	0.00	7,577.89	2,370.07	665.92	2,370.13	0.00	0.00	0.00
10,000.00	90.33	0.00	7,577.31	2,470.07	665.92	2,470.13	0.00	0.00	0.00
10,100.00	90.33	0.00	7,576.73	2,570.07	665.92	2,570.13	0.00	0.00	0.00
10,200.00	90.33	0.00	7,576.15	2,670.07	665.92	2,670.13	0.00	0.00	0.00
10,300.00	90.33	0.00	7,575.58	2,770.07	665.92	2,770.13	0.00	0.00	0.00
10,400.00	90.33	0.00	7,575.00	2,870.07	665.92	2,870.12	0.00	0.00	0.00
10,500.00	90.33	0.00	7,574.42	2,970.06	665.92	2,970.12	0.00	0.00	0.00
10,600.00	90.33	0.00	7,573.84	3,070.06	665.92	3,070.12	0.00	0.00	0.00
10,700.00	90.33	0.00	7,573.27	3,170.06	665.92	3,170.12	0.00	0.00	0.00
10,800.00	90.33	0.00	7,572.69	3,270.06	665.92	3,270.12	0.00	0.00	0.00
10,900.00	90.33	0.00	7,572.11	3,370.06	665.92	3,370.12	0.00	0.00	0.00
11,000.00	90.33	0.00	7,571.53	3,470.06	665.92	3,470.11	0.00	0.00	0.00
11,100.00	90.33	0.00	7,570.96	3,570.05	665.92	3,570.11	0.00	0.00	0.00
11,200.00	90.33	0.00	7,570.38	3,670.05	665.92	3,670.11	0.00	0.00	0.00
11,300.00	90.33	0.00	7,569.80	3,770.05	665.92	3,770.11	0.00	0.00	0.00
11,400.00	90.33	0.00	7,569.22	3,870.05	665.92	3,870.11	0.00	0.00	0.00
11,500.00	90.33	0.00	7,568.65	3,970.05	665.92	3,970.11	0.00	0.00	0.00
11,600.00	90.33	0.00	7,568.07	4,070.05	665.92	4,070.10	0.00	0.00	0.00
11,700.00	90.33	0.00	7,567.49	4,170.04	665.92	4,170.10	0.00	0.00	0.00
11,800.00	90.33	0.00	7,566.91	4,270.04	665.92	4,270.10	0.00	0.00	0.00
11,900.00	90.33	0.00	7,566.34	4,370.04	665.92	4,370.10	0.00	0.00	0.00
12,000.00	90.33	0.00	7,565.76	4,470.04	665.92	4,470.10	0.00	0.00	0.00
12,100.00	90.33	0.00	7,565.18	4,570.04	665.92	4,570.10	0.00	0.00	0.00
12,200.00	90.33	0.00	7,564.60	4,670.04	665.92	4,670.09	0.00	0.00	0.00
12,300.00	90.33	0.00	7,564.03	4,770.03	665.92	4,770.09	0.00	0.00	0.00
12,400.00	90.33	0.00	7,563.45	4,870.03	665.92	4,870.09	0.00	0.00	0.00
12,500.00	90.33	0.00	7,562.87	4,970.03	665.92	4,970.09	0.00	0.00	0.00
12,600.00	90.33	0.00	7,562.29	5,070.03	665.92	5,070.09	0.00	0.00	0.00
12,700.00	90.33	0.00	7,561.72	5,170.03	665.92	5,170.09	0.00	0.00	0.00
12,800.00	90.33	0.00	7,561.14	5,270.03	665.92	5,270.08	0.00	0.00	0.00
12,900.00	90.33	0.00	7,560.56	5,370.02	665.92	5,370.08	0.00	0.00	0.00
13,000.00	90.33	0.00	7,559.98	5,470.02	665.92	5,470.08	0.00	0.00	0.00
13,100.00	90.33	0.00	7,559.41	5,570.02	665.92	5,570.08	0.00	0.00	0.00
13,200.00	90.33	0.00	7,558.83	5,670.02	665.92	5,670.08	0.00	0.00	0.00
13,300.00	90.33	0.00	7,558.25	5,770.02	665.92	5,770.08	0.00	0.00	0.00
13,400.00	90.33	0.00	7,557.67	5,870.02	665.92	5,870.07	0.00	0.00	0.00
13,500.00	90.33	0.00	7,557.10	5,970.01	665.92	5,970.07	0.00	0.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well HOWARD 28N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5050' & KB 17' @ 5067.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5050' & KB 17' @ 5067.00ft (ASSUMED)
Site:	HOWARD 6-32HZ	North Reference:	True
Well:	HOWARD 28N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2 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)
13,600.00	90.33	0.00	7,556.52	6,070.01	665.92	6,070.07	0.00	0.00	0.00
13,700.00	90.33	0.00	7,555.94	6,170.01	665.92	6,170.07	0.00	0.00	0.00
13,800.00	90.33	0.00	7,555.36	6,270.01	665.92	6,270.07	0.00	0.00	0.00
13,900.00	90.33	0.00	7,554.79	6,370.01	665.92	6,370.07	0.00	0.00	0.00
14,000.00	90.33	0.00	7,554.21	6,470.01	665.92	6,470.06	0.00	0.00	0.00
14,100.00	90.33	0.00	7,553.63	6,570.00	665.92	6,570.06	0.00	0.00	0.00
14,200.00	90.33	0.00	7,553.05	6,670.00	665.92	6,670.06	0.00	0.00	0.00
14,300.00	90.33	0.00	7,552.47	6,770.00	665.92	6,770.06	0.00	0.00	0.00
14,400.00	90.33	0.00	7,551.90	6,870.00	665.92	6,870.06	0.00	0.00	0.00
14,500.00	90.33	0.00	7,551.32	6,970.00	665.92	6,970.06	0.00	0.00	0.00
14,600.00	90.33	0.00	7,550.74	7,070.00	665.92	7,070.05	0.00	0.00	0.00
14,700.00	90.33	0.00	7,550.16	7,169.99	665.92	7,170.05	0.00	0.00	0.00
14,800.00	90.33	0.00	7,549.59	7,269.99	665.92	7,270.05	0.00	0.00	0.00
14,900.00	90.33	0.00	7,549.01	7,369.99	665.92	7,370.05	0.00	0.00	0.00
15,000.00	90.33	0.00	7,548.43	7,469.99	665.92	7,470.05	0.00	0.00	0.00
15,100.00	90.33	0.00	7,547.85	7,569.99	665.92	7,570.05	0.00	0.00	0.00
15,200.00	90.33	0.00	7,547.28	7,669.99	665.92	7,670.04	0.00	0.00	0.00
15,247.92	90.33	0.00	7,547.00	7,717.91	665.92	7,717.97	0.00	0.00	0.00
TD at 15247.92 - PBHL_HOWARD 28N-29HZ(1' FNL 2550' 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_HOWARD 28N-2	0.00	0.00	7,547.00	7,717.91	665.92	1,254,069.71	3,163,900.24	40.0293240	-104.9147070
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
866.00	866.00	9 5/8"	9.625	12.250	
7,976.16	7,589.00	7" (1994 FNL 2534 FWL)	7.000	7.500	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
816.00	815.00	Fox Hills Base			
4,853.38	4,805.00	Sussex			
5,401.45	5,345.00	Shannon			
7,417.15	7,339.00	Sharon Springs			
7,507.23	7,409.00	Niobrara A			
7,792.96	7,560.00	Niobrara B			

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well HOWARD 28N-29HZ
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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5050' & KB 17' @ 5067.00ft (ASSUMED)
Site:	HOWARD 6-32HZ	North Reference:	True
Well:	HOWARD 28N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2 PRELIMINARY		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,400.00	1,400.00	0.00	0.00	Start Build 2.00
1,899.88	1,897.35	-8.34	42.70	Start 3407.04 hold at 1899.88 MD
5,306.92	5,252.65	-121.66	623.22	Start Drop -2.00
5,806.80	5,750.00	-130.00	665.92	Start 1266.05 hold at 5806.80 MD
7,072.85	7,016.05	-130.00	665.92	Start DLS 10.00 TFO 0.00
7,976.16	7,589.00	446.27	665.92	Start 7271.76 hold at 7976.16 MD
15,247.92	7,547.00	7,717.91	665.92	TD at 15247.92