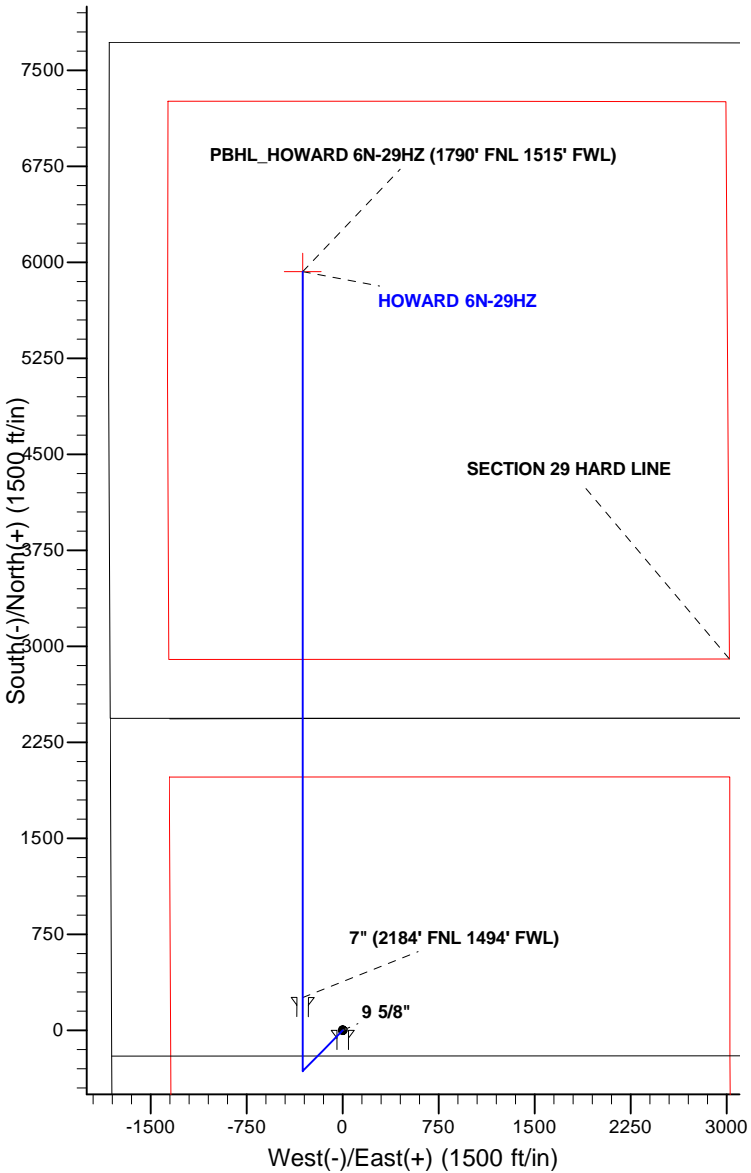
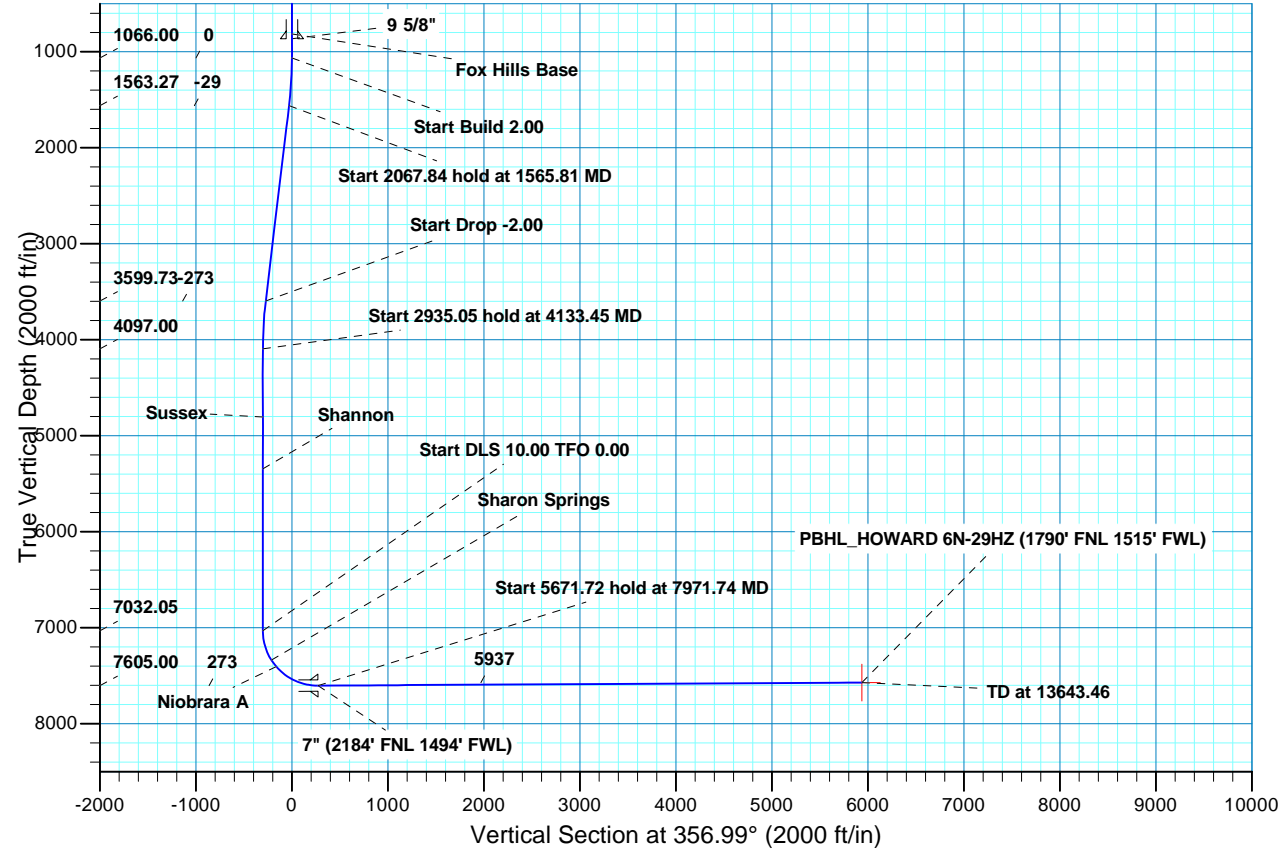


WELL DETAILS: HOWARD 6N-29HZ										
GL 5050 & KB 17 @ 5066.00ft (ASSUMED)										
		+N/-S	+E/-W	Northing		Easting		Latitude		Longitude
		0.00	0.00	1246347.22		3163224.85		40.0081370		-104.9173000
SECTION DETAILS										
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1066.00	0.00	0.00	1066.00	0.00	0.00	0.00	0.00	0.00	0.00	
1565.81	10.00	224.35	1563.27	-31.10	-30.40	2.00	224.35	-29.46		
3633.65	10.00	224.35	3599.73	-287.78	-281.30	0.00	0.00	-272.62		
4133.45	0.00	0.00	4097.00	-318.88	-311.70	2.00	180.00	-302.08		
7068.50	0.00	0.00	7032.05	-318.88	-311.70	0.00	0.00	-302.08		
7971.74	90.32	0.00	7605.00	257.31	-311.70	10.00	0.00	273.32		
13643.46	90.32	0.00	7573.00	5928.94	-311.70	0.00	0.005937.13	PBHL_HOWARD 6N-29HZ (1790' FNL 1515' 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	4842.45	Sussex				0.00	7605.00	7971.74	7"	7.000
5346.00	5382.45	Shannon				0.00				
7339.00	7392.44	Sharon Springs				32.39				
7406.00	7475.93	Niobrara A				40.74				
7564.00	7750.41	Niobrara B				68.19				





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

HOWARD 6-32HZ

HOWARD 6N-29HZ

OH

Plan: PLAN #2 PRELIMINARY

Standard Planning Report

18 July, 2013

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well HOWARD 6N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5050 & KB 17 @ 5066.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5050 & KB 17 @ 5066.00ft (ASSUMED)
Site:	HOWARD 6-32HZ	North Reference:	True
Well:	HOWARD 6N-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 6N-29HZ, 2439 FNL 1805 FWL			
Well Position	+N/-S	0.00 ft	Northing:	1,246,347.22 usft
	+E/-W	0.00 ft	Easting:	3,163,224.85 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Ground Level: 5,049.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	2013/06/12	8.70	66.61	52,596

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	356.99

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	
1,066.00	0.00	0.00	1,066.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,565.81	10.00	224.35	1,563.27	-31.10	-30.40	2.00	2.00	0.00	224.35	
3,633.65	10.00	224.35	3,599.73	-287.78	-281.30	0.00	0.00	0.00	0.00	
4,133.45	0.00	0.00	4,097.00	-318.88	-311.70	2.00	-2.00	0.00	180.00	
7,068.50	0.00	0.00	7,032.05	-318.88	-311.70	0.00	0.00	0.00	0.00	
7,971.74	90.32	0.00	7,605.00	257.31	-311.70	10.00	10.00	0.00	0.00	
13,643.46	90.32	0.00	7,573.00	5,928.95	-311.70	0.00	0.00	0.00	0.00	PBHL_HOWARD 6N-

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well HOWARD 6N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5050 & KB 17 @ 5066.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5050 & KB 17 @ 5066.00ft (ASSUMED)
Site:	HOWARD 6-32HZ	North Reference:	True
Well:	HOWARD 6N-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
1,066.00	0.00	0.00	1,066.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,100.00	0.68	224.35	1,100.00	-0.14	-0.14	-0.14	2.00	2.00	0.00
1,200.00	2.68	224.35	1,199.95	-2.24	-2.19	-2.12	2.00	2.00	0.00
1,300.00	4.68	224.35	1,299.74	-6.83	-6.68	-6.47	2.00	2.00	0.00
1,400.00	6.68	224.35	1,399.24	-13.91	-13.59	-13.17	2.00	2.00	0.00
1,500.00	8.68	224.35	1,498.34	-23.46	-22.94	-22.23	2.00	2.00	0.00
1,565.81	10.00	224.35	1,563.27	-31.10	-30.40	-29.46	2.00	2.00	0.00
Start 2067.84 hold at 1565.81 MD									
1,600.00	10.00	224.35	1,596.95	-35.34	-34.55	-33.48	0.00	0.00	0.00
1,700.00	10.00	224.35	1,695.43	-47.76	-46.68	-45.24	0.00	0.00	0.00
1,800.00	10.00	224.35	1,793.91	-60.17	-58.82	-57.00	0.00	0.00	0.00
1,900.00	10.00	224.35	1,892.40	-72.58	-70.95	-68.76	0.00	0.00	0.00
2,000.00	10.00	224.35	1,990.88	-85.00	-83.08	-80.52	0.00	0.00	0.00
2,100.00	10.00	224.35	2,089.36	-97.41	-95.22	-92.28	0.00	0.00	0.00
2,200.00	10.00	224.35	2,187.84	-109.82	-107.35	-104.03	0.00	0.00	0.00
2,300.00	10.00	224.35	2,286.32	-122.23	-119.48	-115.79	0.00	0.00	0.00
2,400.00	10.00	224.35	2,384.80	-134.65	-131.62	-127.55	0.00	0.00	0.00
2,500.00	10.00	224.35	2,483.29	-147.06	-143.75	-139.31	0.00	0.00	0.00
2,600.00	10.00	224.35	2,581.77	-159.47	-155.88	-151.07	0.00	0.00	0.00
2,700.00	10.00	224.35	2,680.25	-171.89	-168.02	-162.83	0.00	0.00	0.00
2,800.00	10.00	224.35	2,778.73	-184.30	-180.15	-174.59	0.00	0.00	0.00
2,900.00	10.00	224.35	2,877.21	-196.71	-192.28	-186.35	0.00	0.00	0.00
3,000.00	10.00	224.35	2,975.70	-209.13	-204.42	-198.11	0.00	0.00	0.00
3,100.00	10.00	224.35	3,074.18	-221.54	-216.55	-209.86	0.00	0.00	0.00
3,200.00	10.00	224.35	3,172.66	-233.95	-228.68	-221.62	0.00	0.00	0.00
3,300.00	10.00	224.35	3,271.14	-246.36	-240.82	-233.38	0.00	0.00	0.00
3,400.00	10.00	224.35	3,369.62	-258.78	-252.95	-245.14	0.00	0.00	0.00
3,500.00	10.00	224.35	3,468.11	-271.19	-265.08	-256.90	0.00	0.00	0.00
3,600.00	10.00	224.35	3,566.59	-283.60	-277.22	-268.66	0.00	0.00	0.00
3,633.65	10.00	224.35	3,599.73	-287.78	-281.30	-272.62	0.00	0.00	0.00
Start Drop -2.00									
3,700.00	8.67	224.35	3,665.20	-295.47	-288.82	-279.90	2.00	-2.00	0.00
3,800.00	6.67	224.35	3,764.30	-305.02	-298.15	-288.94	2.00	-2.00	0.00
3,900.00	4.67	224.35	3,863.80	-312.08	-305.05	-295.64	2.00	-2.00	0.00
4,000.00	2.67	224.35	3,963.59	-316.66	-309.53	-299.97	2.00	-2.00	0.00
4,100.00	0.67	224.35	4,063.55	-318.74	-311.56	-301.94	2.00	-2.00	0.00
4,133.45	0.00	0.00	4,097.00	-318.88	-311.70	-302.08	2.00	-2.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well HOWARD 6N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5050 & KB 17 @ 5066.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5050 & KB 17 @ 5066.00ft (ASSUMED)
Site:	HOWARD 6-32HZ	North Reference:	True
Well:	HOWARD 6N-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)	
Start 2935.05 hold at 4133.45 MD										
4,200.00	0.00	0.00	4,163.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
4,300.00	0.00	0.00	4,263.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
4,400.00	0.00	0.00	4,363.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
4,500.00	0.00	0.00	4,463.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
4,600.00	0.00	0.00	4,563.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
4,700.00	0.00	0.00	4,663.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
4,800.00	0.00	0.00	4,763.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
4,842.45	0.00	0.00	4,806.00	-318.88	-311.70	-302.08	0.00	0.00	0.00	
Sussex										
4,900.00	0.00	0.00	4,863.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
5,000.00	0.00	0.00	4,963.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
5,100.00	0.00	0.00	5,063.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,163.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,263.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
5,382.45	0.00	0.00	5,346.00	-318.88	-311.70	-302.08	0.00	0.00	0.00	
Shannon										
5,400.00	0.00	0.00	5,363.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,463.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,563.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,663.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,763.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,863.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
6,000.00	0.00	0.00	5,963.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
6,100.00	0.00	0.00	6,063.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,163.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,263.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,363.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,463.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,563.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,663.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,763.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
6,900.00	0.00	0.00	6,863.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
7,000.00	0.00	0.00	6,963.55	-318.88	-311.70	-302.08	0.00	0.00	0.00	
7,068.50	0.00	0.00	7,032.05	-318.88	-311.70	-302.08	0.00	0.00	0.00	
Start DLS 10.00 TFO 0.00										
7,100.00	3.15	0.00	7,063.53	-318.01	-311.70	-301.21	10.00	10.00	0.00	
7,200.00	13.15	0.00	7,162.39	-303.86	-311.70	-287.07	10.00	10.00	0.00	
7,300.00	23.15	0.00	7,257.30	-272.75	-311.70	-256.01	10.00	10.00	0.00	
7,392.44	32.39	0.00	7,339.00	-229.72	-311.70	-213.04	10.00	10.00	0.00	
Sharon Springs										
7,400.00	33.15	0.00	7,345.36	-225.63	-311.70	-208.95	10.00	10.00	0.00	
7,475.93	40.74	0.00	7,406.00	-180.02	-311.70	-163.41	10.00	10.00	0.00	
Niobrara A										
7,500.00	43.15	0.00	7,423.90	-163.94	-311.70	-147.35	10.00	10.00	0.00	
7,600.00	53.15	0.00	7,490.53	-89.54	-311.70	-73.05	10.00	10.00	0.00	
7,700.00	63.15	0.00	7,543.24	-4.71	-311.70	11.66	10.00	10.00	0.00	
7,750.41	68.19	0.00	7,564.00	41.22	-311.70	57.52	10.00	10.00	0.00	
Niobrara B										
7,800.00	73.15	0.00	7,580.41	87.99	-311.70	104.24	10.00	10.00	0.00	
7,900.00	83.15	0.00	7,600.92	185.74	-311.70	201.84	10.00	10.00	0.00	
7,971.74	90.32	0.00	7,605.00	257.31	-311.70	273.32	10.00	10.00	0.00	
Start 5671.72 hold at 7971.74 MD - 7" (2184' FNL 1494' FWL)										

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well HOWARD 6N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5050 & KB 17 @ 5066.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5050 & KB 17 @ 5066.00ft (ASSUMED)
Site:	HOWARD 6-32HZ	North Reference:	True
Well:	HOWARD 6N-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)	
8,000.00	90.32	0.00	7,604.84	285.57	-311.70	301.54	0.00	0.00	0.00	
8,100.00	90.32	0.00	7,604.28	385.57	-311.70	401.40	0.00	0.00	0.00	
8,200.00	90.32	0.00	7,603.71	485.57	-311.70	501.26	0.00	0.00	0.00	
8,300.00	90.32	0.00	7,603.15	585.57	-311.70	601.13	0.00	0.00	0.00	
8,400.00	90.32	0.00	7,602.58	685.57	-311.70	700.99	0.00	0.00	0.00	
8,500.00	90.32	0.00	7,602.02	785.57	-311.70	800.85	0.00	0.00	0.00	
8,600.00	90.32	0.00	7,601.45	885.56	-311.70	900.71	0.00	0.00	0.00	
8,700.00	90.32	0.00	7,600.89	985.56	-311.70	1,000.57	0.00	0.00	0.00	
8,800.00	90.32	0.00	7,600.33	1,085.56	-311.70	1,100.43	0.00	0.00	0.00	
8,900.00	90.32	0.00	7,599.76	1,185.56	-311.70	1,200.29	0.00	0.00	0.00	
9,000.00	90.32	0.00	7,599.20	1,285.56	-311.70	1,300.15	0.00	0.00	0.00	
9,100.00	90.32	0.00	7,598.63	1,385.56	-311.70	1,400.01	0.00	0.00	0.00	
9,200.00	90.32	0.00	7,598.07	1,485.55	-311.70	1,499.87	0.00	0.00	0.00	
9,300.00	90.32	0.00	7,597.51	1,585.55	-311.70	1,599.73	0.00	0.00	0.00	
9,400.00	90.32	0.00	7,596.94	1,685.55	-311.70	1,699.59	0.00	0.00	0.00	
9,500.00	90.32	0.00	7,596.38	1,785.55	-311.70	1,799.45	0.00	0.00	0.00	
9,600.00	90.32	0.00	7,595.81	1,885.55	-311.70	1,899.31	0.00	0.00	0.00	
9,700.00	90.32	0.00	7,595.25	1,985.55	-311.70	1,999.17	0.00	0.00	0.00	
9,800.00	90.32	0.00	7,594.68	2,085.54	-311.70	2,099.03	0.00	0.00	0.00	
9,900.00	90.32	0.00	7,594.12	2,185.54	-311.70	2,198.89	0.00	0.00	0.00	
10,000.00	90.32	0.00	7,593.56	2,285.54	-311.70	2,298.75	0.00	0.00	0.00	
10,100.00	90.32	0.00	7,592.99	2,385.54	-311.70	2,398.61	0.00	0.00	0.00	
10,200.00	90.32	0.00	7,592.43	2,485.54	-311.70	2,498.47	0.00	0.00	0.00	
10,300.00	90.32	0.00	7,591.86	2,585.54	-311.70	2,598.34	0.00	0.00	0.00	
10,400.00	90.32	0.00	7,591.30	2,685.54	-311.70	2,698.20	0.00	0.00	0.00	
10,500.00	90.32	0.00	7,590.73	2,785.53	-311.70	2,798.06	0.00	0.00	0.00	
10,600.00	90.32	0.00	7,590.17	2,885.53	-311.70	2,897.92	0.00	0.00	0.00	
10,700.00	90.32	0.00	7,589.61	2,985.53	-311.70	2,997.78	0.00	0.00	0.00	
10,800.00	90.32	0.00	7,589.04	3,085.53	-311.70	3,097.64	0.00	0.00	0.00	
10,900.00	90.32	0.00	7,588.48	3,185.53	-311.70	3,197.50	0.00	0.00	0.00	
11,000.00	90.32	0.00	7,587.91	3,285.53	-311.70	3,297.36	0.00	0.00	0.00	
11,100.00	90.32	0.00	7,587.35	3,385.52	-311.70	3,397.22	0.00	0.00	0.00	
11,200.00	90.32	0.00	7,586.79	3,485.52	-311.70	3,497.08	0.00	0.00	0.00	
11,300.00	90.32	0.00	7,586.22	3,585.52	-311.70	3,596.94	0.00	0.00	0.00	
11,400.00	90.32	0.00	7,585.66	3,685.52	-311.70	3,696.80	0.00	0.00	0.00	
11,500.00	90.32	0.00	7,585.09	3,785.52	-311.70	3,796.66	0.00	0.00	0.00	
11,600.00	90.32	0.00	7,584.53	3,885.52	-311.70	3,896.52	0.00	0.00	0.00	
11,700.00	90.32	0.00	7,583.96	3,985.51	-311.70	3,996.38	0.00	0.00	0.00	
11,800.00	90.32	0.00	7,583.40	4,085.51	-311.70	4,096.24	0.00	0.00	0.00	
11,900.00	90.32	0.00	7,582.84	4,185.51	-311.70	4,196.10	0.00	0.00	0.00	
12,000.00	90.32	0.00	7,582.27	4,285.51	-311.70	4,295.96	0.00	0.00	0.00	
12,100.00	90.32	0.00	7,581.71	4,385.51	-311.70	4,395.82	0.00	0.00	0.00	
12,200.00	90.32	0.00	7,581.14	4,485.51	-311.70	4,495.68	0.00	0.00	0.00	
12,300.00	90.32	0.00	7,580.58	4,585.50	-311.70	4,595.55	0.00	0.00	0.00	
12,400.00	90.32	0.00	7,580.02	4,685.50	-311.70	4,695.41	0.00	0.00	0.00	
12,500.00	90.32	0.00	7,579.45	4,785.50	-311.70	4,795.27	0.00	0.00	0.00	
12,600.00	90.32	0.00	7,578.89	4,885.50	-311.70	4,895.13	0.00	0.00	0.00	
12,700.00	90.32	0.00	7,578.32	4,985.50	-311.70	4,994.99	0.00	0.00	0.00	
12,800.00	90.32	0.00	7,577.76	5,085.50	-311.70	5,094.85	0.00	0.00	0.00	
12,900.00	90.32	0.00	7,577.19	5,185.50	-311.70	5,194.71	0.00	0.00	0.00	
13,000.00	90.32	0.00	7,576.63	5,285.49	-311.70	5,294.57	0.00	0.00	0.00	
13,100.00	90.32	0.00	7,576.07	5,385.49	-311.70	5,394.43	0.00	0.00	0.00	
13,200.00	90.32	0.00	7,575.50	5,485.49	-311.70	5,494.29	0.00	0.00	0.00	
13,300.00	90.32	0.00	7,574.94	5,585.49	-311.70	5,594.15	0.00	0.00	0.00	

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well HOWARD 6N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5050 & KB 17 @ 5066.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5050 & KB 17 @ 5066.00ft (ASSUMED)
Site:	HOWARD 6-32HZ	North Reference:	True
Well:	HOWARD 6N-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)
13,400.00	90.32	0.00	7,574.37	5,685.49	-311.70	5,694.01	0.00	0.00	0.00
13,500.00	90.32	0.00	7,573.81	5,785.49	-311.70	5,793.87	0.00	0.00	0.00
13,600.00	90.32	0.00	7,573.25	5,885.48	-311.70	5,893.73	0.00	0.00	0.00
13,643.46	90.32	0.00	7,573.00	5,928.95	-311.70	5,937.13	0.00	0.00	0.00
TD at 13643.46 - PBHL_HOWARD 6N-29HZ (1790' FNL 1515' 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 6N-29	0.00	0.00	7,573.00	5,928.95	-311.70	1,252,273.98	3,162,874.19	40.0244130	-104.9184130
- 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	
7,971.74	7,605.00	7" (2184' FNL 1494' FWL)	7.000	7.500	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
816.00	816.00	Fox Hills Base				
4,842.45	4,806.00	Sussex				
5,382.45	5,346.00	Shannon				
7,392.44	7,339.00	Sharon Springs				
7,475.93	7,406.00	Niobrara A				
7,750.41	7,564.00	Niobrara B				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,066.00	1,066.00	0.00	0.00	Start Build 2.00
1,565.81	1,563.27	-31.10	-30.40	Start 2067.84 hold at 1565.81 MD
3,633.65	3,599.73	-287.78	-281.30	Start Drop -2.00
4,133.45	4,097.00	-318.88	-311.70	Start 2935.05 hold at 4133.45 MD
7,068.50	7,032.05	-318.88	-311.70	Start DLS 10.00 TFO 0.00
7,971.74	7,605.00	257.31	-311.70	Start 5671.72 hold at 7971.74 MD
13,643.46	7,573.00	5,928.95	-311.70	TD at 13643.46