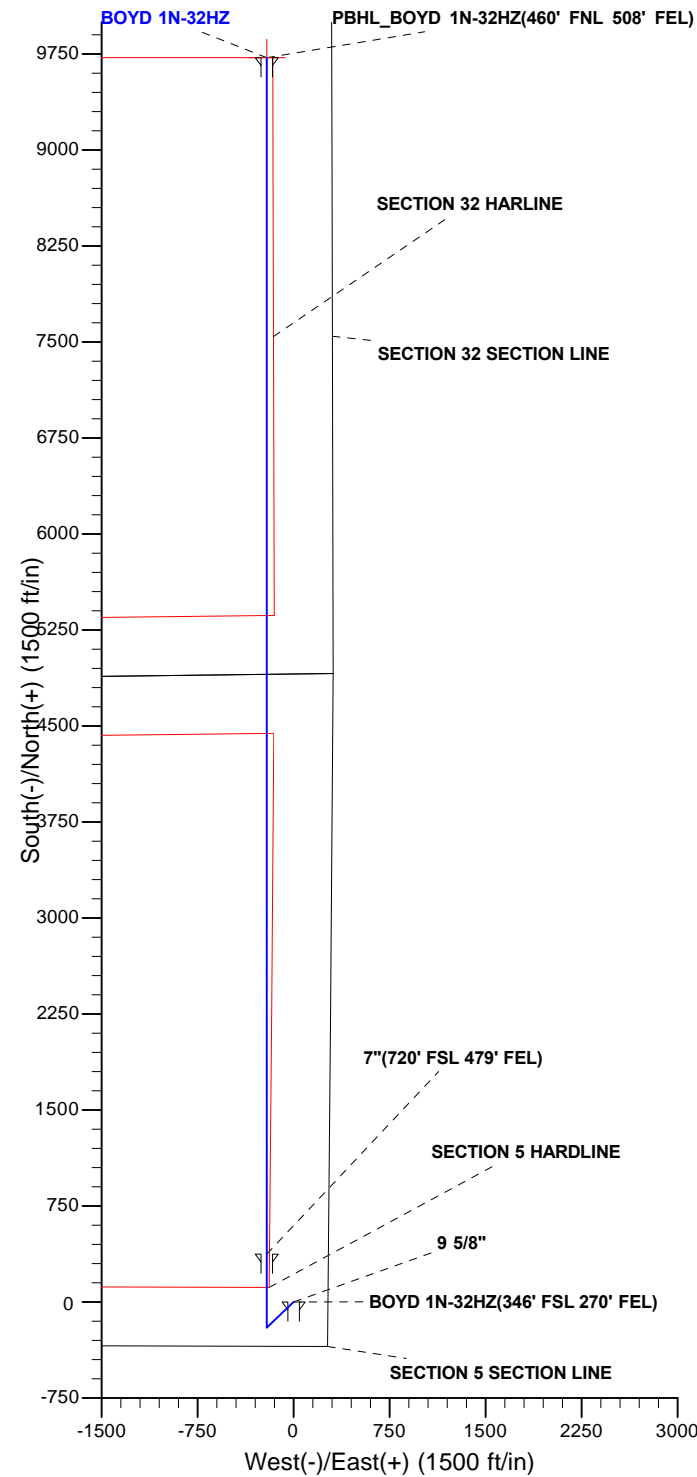
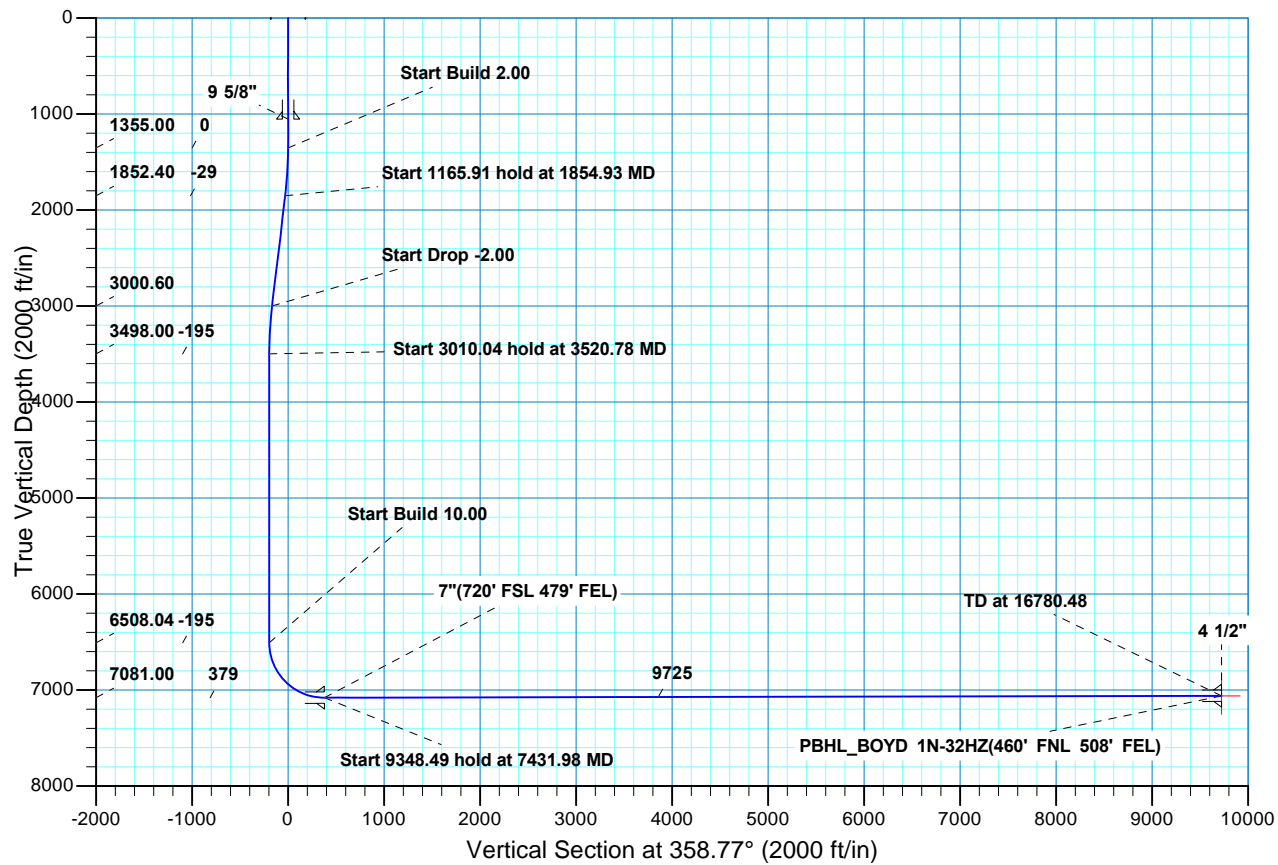




Project: COLORADO NORTHERN ZONE - 83  
 Site: BOYD 16-15HZ PAD  
 Well: BOYD 1N-32HZ  
 Wellbore: OH  
 Design: PLAN #1 PRELIMINARY



WELL DETAILS: BOYD 1N-32HZ									
GL 4931' & KB 16' @ 4947.00ft (ASSUMED)									
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude				
0.00	0.00	1270967.79	3229645.12	40.0742800	-104.6793830				
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
1355.00	0.00	0.00	1355.00	0.00	0.00	0.00	0.00	0.00	0.00
1854.93	10.00	226.29	1852.40	-30.06	-31.45	2.00	226.29	-29.38	
3020.84	10.00	226.29	3000.60	-169.94	-177.79	0.00	0.00	-166.07	
3520.78	0.00	0.00	3498.00	-200.00	-209.25	2.00	180.00	-195.45	
6530.82	0.00	0.00	6508.04	-200.00	-209.25	0.00	0.00	-195.45	
7431.98	90.12	0.00	7081.00	374.12	-209.25	10.00	0.00	378.54	
16780.48	90.12	0.00	7062.00	9722.60	-209.25	0.00	0.009724.85		PBHL_BOYD 1N-32HZ(460' FNL 508' FEL)
FORMATION TOP DETAILS				CASING DETAILS					
TVDPath	MDPath	Formation	Inc	TVD	MD	Name	Size		
4399.00	4421.78	Sussex	0.00	1055.00	1055.00	9 5/8"	9.625		
6960.00	7051.57	Sharon Springs	52.07	7081.00	7431.98	7"	7.000		
6988.00	7099.78	Niobrara A	56.90	7062.00	16780.48	4 1/2"	4.500		
7078.00	7372.14	Niobrara B	84.13						





# Scientific Drilling

## **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**BOYD 16-15HZ PAD**

**BOYD 1N-32HZ**

**OH**

**Plan: PLAN #1 PRELIMINARY**

## **Standard Planning Report**

**28 February, 2013**

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well BOYD 1N-32HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4931' & KB 16' @ 4947.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4931' & KB 16' @ 4947.00ft (ASSUMED)
<b>Site:</b>	BOYD 16-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	BOYD 1N-32HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #1 PRELIMINARY		

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

<b>Site</b>	BOYD 16-15HZ PAD, SECTION 5 T1N R65W				
<b>Site Position:</b>	<b>Northing:</b>	1,271,010.81 usft	<b>Latitude:</b>	40.0743970	
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,229,686.70 usft	<b>Longitude:</b>	-104.6792330
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.53 °

<b>Well</b>	BOYD 1N-32HZ, 346' FSL 270' FEL					
<b>Well Position</b>	<b>+N/-S</b>	-42.63 ft	<b>Northing:</b>	1,270,967.79 usft	<b>Latitude:</b>	40.0742800
	<b>+E/-W</b>	-41.98 ft	<b>Easting:</b>	3,229,645.12 usft	<b>Longitude:</b>	-104.6793830
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	4,931.00 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2012	2013/02/28	8.62	66.72	52,696

<b>Design</b>	PLAN #1 PRELIMINARY			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	358.77

<b>Plan Sections</b>										
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	
1,355.00	0.00	0.00	1,355.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,854.93	10.00	226.29	1,852.40	-30.06	-31.45	2.00	2.00	0.00	226.29	
3,020.84	10.00	226.29	3,000.60	-169.94	-177.79	0.00	0.00	0.00	0.00	
3,520.78	0.00	0.00	3,498.00	-200.00	-209.25	2.00	-2.00	0.00	180.00	
6,530.82	0.00	0.00	6,508.04	-200.00	-209.25	0.00	0.00	0.00	0.00	
7,431.98	90.12	0.00	7,081.00	374.12	-209.25	10.00	10.00	0.00	0.00	
16,780.48	90.12	0.00	7,062.00	9,722.60	-209.25	0.00	0.00	0.00	0.00	PBHL_BOYD 1N-32H

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well BOYD 1N-32HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4931' & KB 16' @ 4947.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4931' & KB 16' @ 4947.00ft (ASSUMED)
<b>Site:</b>	BOYD 16-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	BOYD 1N-32HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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	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
1,055.00	0.00	0.00	1,055.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</b>										
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
1,355.00	0.00	0.00	1,355.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 2.00</b>										
1,400.00	0.90	226.29	1,400.00	-0.24	-0.26	-0.24	2.00	2.00	0.00	0.00
1,500.00	2.90	226.29	1,499.94	-2.53	-2.65	-2.48	2.00	2.00	0.00	0.00
1,600.00	4.90	226.29	1,599.70	-7.23	-7.57	-7.07	2.00	2.00	0.00	0.00
1,700.00	6.90	226.29	1,699.17	-14.34	-15.00	-14.01	2.00	2.00	0.00	0.00
1,800.00	8.90	226.29	1,798.21	-23.83	-24.93	-23.29	2.00	2.00	0.00	0.00
1,854.93	10.00	226.29	1,852.40	-30.06	-31.45	-29.38	2.00	2.00	0.00	0.00
<b>Start 1165.91 hold at 1854.93 MD</b>										
1,900.00	10.00	226.29	1,896.78	-35.47	-37.11	-34.66	0.00	0.00	0.00	0.00
2,000.00	10.00	226.29	1,995.26	-47.47	-49.66	-46.39	0.00	0.00	0.00	0.00
2,100.00	10.00	226.29	2,093.74	-59.46	-62.21	-58.11	0.00	0.00	0.00	0.00
2,200.00	10.00	226.29	2,192.23	-71.46	-74.76	-69.84	0.00	0.00	0.00	0.00
2,300.00	10.00	226.29	2,290.71	-83.46	-87.32	-81.56	0.00	0.00	0.00	0.00
2,400.00	10.00	226.29	2,389.19	-95.45	-99.87	-93.28	0.00	0.00	0.00	0.00
2,500.00	10.00	226.29	2,487.67	-107.45	-112.42	-105.01	0.00	0.00	0.00	0.00
2,600.00	10.00	226.29	2,586.15	-119.45	-124.97	-116.73	0.00	0.00	0.00	0.00
2,700.00	10.00	226.29	2,684.63	-131.45	-137.52	-128.46	0.00	0.00	0.00	0.00
2,800.00	10.00	226.29	2,783.11	-143.44	-150.07	-140.18	0.00	0.00	0.00	0.00
2,900.00	10.00	226.29	2,881.59	-155.44	-162.62	-151.90	0.00	0.00	0.00	0.00
3,000.00	10.00	226.29	2,980.07	-167.44	-175.18	-163.63	0.00	0.00	0.00	0.00
3,020.84	10.00	226.29	3,000.60	-169.94	-177.79	-166.07	0.00	0.00	0.00	0.00
<b>Start Drop -2.00</b>										
3,100.00	8.42	226.29	3,078.74	-178.69	-186.95	-174.62	2.00	-2.00	0.00	0.00
3,200.00	6.42	226.29	3,177.89	-187.60	-196.28	-183.34	2.00	-2.00	0.00	0.00
3,300.00	4.42	226.29	3,277.44	-194.12	-203.10	-189.71	2.00	-2.00	0.00	0.00
3,400.00	2.42	226.29	3,377.26	-198.24	-207.40	-193.73	2.00	-2.00	0.00	0.00
3,500.00	0.42	226.29	3,477.22	-199.95	-209.19	-195.40	2.00	-2.00	0.00	0.00
3,520.78	0.00	0.00	3,498.00	-200.00	-209.25	-195.45	2.00	-2.00	0.00	0.00
<b>Start 3010.04 hold at 3520.78 MD</b>										
3,600.00	0.00	0.00	3,577.22	-200.00	-209.25	-195.45	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,677.22	-200.00	-209.25	-195.45	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,777.22	-200.00	-209.25	-195.45	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,877.22	-200.00	-209.25	-195.45	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	3,977.22	-200.00	-209.25	-195.45	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,077.22	-200.00	-209.25	-195.45	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,177.22	-200.00	-209.25	-195.45	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,277.22	-200.00	-209.25	-195.45	0.00	0.00	0.00	0.00

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well BOYD 1N-32HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4931' & KB 16' @ 4947.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4931' & KB 16' @ 4947.00ft (ASSUMED)
<b>Site:</b>	BOYD 16-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	BOYD 1N-32HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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	0.00	0.00	4,377.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
4,421.78	0.00	0.00	4,399.00	-200.00	-209.25	-195.45	0.00	0.00	0.00
<b>Sussex</b>									
4,500.00	0.00	0.00	4,477.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
4,600.00	0.00	0.00	4,577.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
4,700.00	0.00	0.00	4,677.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
4,800.00	0.00	0.00	4,777.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
4,900.00	0.00	0.00	4,877.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
5,000.00	0.00	0.00	4,977.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
5,100.00	0.00	0.00	5,077.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
5,200.00	0.00	0.00	5,177.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
5,300.00	0.00	0.00	5,277.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
5,400.00	0.00	0.00	5,377.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
5,500.00	0.00	0.00	5,477.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
5,600.00	0.00	0.00	5,577.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
5,700.00	0.00	0.00	5,677.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
5,800.00	0.00	0.00	5,777.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
5,900.00	0.00	0.00	5,877.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
6,000.00	0.00	0.00	5,977.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
6,100.00	0.00	0.00	6,077.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
6,200.00	0.00	0.00	6,177.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
6,300.00	0.00	0.00	6,277.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
6,400.00	0.00	0.00	6,377.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
6,500.00	0.00	0.00	6,477.22	-200.00	-209.25	-195.45	0.00	0.00	0.00
6,530.82	0.00	0.00	6,508.04	-200.00	-209.25	-195.45	0.00	0.00	0.00
<b>Start Build 10.00</b>									
6,600.00	6.92	0.00	6,577.06	-195.83	-209.25	-191.28	10.00	10.00	0.00
6,700.00	16.92	0.00	6,674.78	-175.20	-209.25	-170.66	10.00	10.00	0.00
6,800.00	26.92	0.00	6,767.43	-137.92	-209.25	-133.39	10.00	10.00	0.00
6,900.00	36.92	0.00	6,852.20	-85.12	-209.25	-80.60	10.00	10.00	0.00
7,000.00	46.92	0.00	6,926.52	-18.40	-209.25	-13.89	10.00	10.00	0.00
7,051.57	52.07	0.00	6,960.00	20.80	-209.25	25.29	10.00	10.00	0.00
<b>Sharon Springs</b>									
7,099.78	56.90	0.00	6,988.00	60.03	-209.25	64.52	10.00	10.00	0.00
<b>Niobrara A</b>									
7,100.00	56.92	0.00	6,988.12	60.22	-209.25	64.70	10.00	10.00	0.00
7,200.00	66.92	0.00	7,035.13	148.33	-209.25	152.80	10.00	10.00	0.00
7,300.00	76.92	0.00	7,066.13	243.27	-209.25	247.72	10.00	10.00	0.00
7,372.14	84.13	0.00	7,078.00	314.38	-209.25	318.81	10.00	10.00	0.00
<b>Niobrara B</b>									
7,400.00	86.92	0.00	7,080.17	342.15	-209.25	346.58	10.00	10.00	0.00
7,431.98	90.12	0.00	7,081.00	374.12	-209.25	378.53	10.00	10.00	0.00
<b>Start 9348.49 hold at 7431.98 MD - 7"(720' FSL 479' FEL)</b>									
7,500.00	90.12	0.00	7,080.86	442.14	-209.25	446.54	0.00	0.00	0.00
7,600.00	90.12	0.00	7,080.66	542.14	-209.25	546.51	0.00	0.00	0.00
7,700.00	90.12	0.00	7,080.46	642.14	-209.25	646.49	0.00	0.00	0.00
7,800.00	90.12	0.00	7,080.25	742.14	-209.25	746.47	0.00	0.00	0.00
7,900.00	90.12	0.00	7,080.05	842.14	-209.25	846.44	0.00	0.00	0.00
8,000.00	90.12	0.00	7,079.85	942.14	-209.25	946.42	0.00	0.00	0.00
8,100.00	90.12	0.00	7,079.64	1,042.14	-209.25	1,046.40	0.00	0.00	0.00
8,200.00	90.12	0.00	7,079.44	1,142.14	-209.25	1,146.37	0.00	0.00	0.00
8,300.00	90.12	0.00	7,079.24	1,242.14	-209.25	1,246.35	0.00	0.00	0.00
8,400.00	90.12	0.00	7,079.03	1,342.14	-209.25	1,346.33	0.00	0.00	0.00

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well BOYD 1N-32HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4931' & KB 16' @ 4947.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4931' & KB 16' @ 4947.00ft (ASSUMED)
<b>Site:</b>	BOYD 16-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	BOYD 1N-32HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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)
8,500.00	90.12	0.00	7,078.83	1,442.14	-209.25	1,446.30	0.00	0.00	0.00
8,600.00	90.12	0.00	7,078.63	1,542.14	-209.25	1,546.28	0.00	0.00	0.00
8,700.00	90.12	0.00	7,078.42	1,642.14	-209.25	1,646.26	0.00	0.00	0.00
8,800.00	90.12	0.00	7,078.22	1,742.14	-209.25	1,746.23	0.00	0.00	0.00
8,900.00	90.12	0.00	7,078.02	1,842.13	-209.25	1,846.21	0.00	0.00	0.00
9,000.00	90.12	0.00	7,077.81	1,942.13	-209.25	1,946.19	0.00	0.00	0.00
9,100.00	90.12	0.00	7,077.61	2,042.13	-209.25	2,046.16	0.00	0.00	0.00
9,200.00	90.12	0.00	7,077.41	2,142.13	-209.25	2,146.14	0.00	0.00	0.00
9,300.00	90.12	0.00	7,077.20	2,242.13	-209.25	2,246.12	0.00	0.00	0.00
9,400.00	90.12	0.00	7,077.00	2,342.13	-209.25	2,346.09	0.00	0.00	0.00
9,500.00	90.12	0.00	7,076.80	2,442.13	-209.25	2,446.07	0.00	0.00	0.00
9,600.00	90.12	0.00	7,076.59	2,542.13	-209.25	2,546.05	0.00	0.00	0.00
9,700.00	90.12	0.00	7,076.39	2,642.13	-209.25	2,646.02	0.00	0.00	0.00
9,800.00	90.12	0.00	7,076.19	2,742.13	-209.25	2,746.00	0.00	0.00	0.00
9,900.00	90.12	0.00	7,075.99	2,842.13	-209.25	2,845.98	0.00	0.00	0.00
10,000.00	90.12	0.00	7,075.78	2,942.13	-209.25	2,945.95	0.00	0.00	0.00
10,100.00	90.12	0.00	7,075.58	3,042.13	-209.25	3,045.93	0.00	0.00	0.00
10,200.00	90.12	0.00	7,075.38	3,142.13	-209.25	3,145.91	0.00	0.00	0.00
10,300.00	90.12	0.00	7,075.17	3,242.13	-209.25	3,245.88	0.00	0.00	0.00
10,400.00	90.12	0.00	7,074.97	3,342.13	-209.25	3,345.86	0.00	0.00	0.00
10,500.00	90.12	0.00	7,074.77	3,442.13	-209.25	3,445.84	0.00	0.00	0.00
10,600.00	90.12	0.00	7,074.56	3,542.13	-209.25	3,545.81	0.00	0.00	0.00
10,700.00	90.12	0.00	7,074.36	3,642.13	-209.25	3,645.79	0.00	0.00	0.00
10,800.00	90.12	0.00	7,074.16	3,742.13	-209.25	3,745.77	0.00	0.00	0.00
10,900.00	90.12	0.00	7,073.95	3,842.13	-209.25	3,845.74	0.00	0.00	0.00
11,000.00	90.12	0.00	7,073.75	3,942.13	-209.25	3,945.72	0.00	0.00	0.00
11,100.00	90.12	0.00	7,073.55	4,042.13	-209.25	4,045.70	0.00	0.00	0.00
11,200.00	90.12	0.00	7,073.34	4,142.13	-209.25	4,145.67	0.00	0.00	0.00
11,300.00	90.12	0.00	7,073.14	4,242.13	-209.25	4,245.65	0.00	0.00	0.00
11,400.00	90.12	0.00	7,072.94	4,342.13	-209.25	4,345.63	0.00	0.00	0.00
11,500.00	90.12	0.00	7,072.73	4,442.13	-209.25	4,445.60	0.00	0.00	0.00
11,600.00	90.12	0.00	7,072.53	4,542.13	-209.25	4,545.58	0.00	0.00	0.00
11,700.00	90.12	0.00	7,072.33	4,642.13	-209.25	4,645.56	0.00	0.00	0.00
11,800.00	90.12	0.00	7,072.12	4,742.13	-209.25	4,745.53	0.00	0.00	0.00
11,900.00	90.12	0.00	7,071.92	4,842.13	-209.25	4,845.51	0.00	0.00	0.00
12,000.00	90.12	0.00	7,071.72	4,942.13	-209.25	4,945.49	0.00	0.00	0.00
12,100.00	90.12	0.00	7,071.51	5,042.13	-209.25	5,045.46	0.00	0.00	0.00
12,200.00	90.12	0.00	7,071.31	5,142.13	-209.25	5,145.44	0.00	0.00	0.00
12,300.00	90.12	0.00	7,071.11	5,242.13	-209.25	5,245.42	0.00	0.00	0.00
12,400.00	90.12	0.00	7,070.90	5,342.13	-209.25	5,345.39	0.00	0.00	0.00
12,500.00	90.12	0.00	7,070.70	5,442.13	-209.25	5,445.37	0.00	0.00	0.00
12,600.00	90.12	0.00	7,070.50	5,542.13	-209.25	5,545.35	0.00	0.00	0.00
12,700.00	90.12	0.00	7,070.29	5,642.13	-209.25	5,645.32	0.00	0.00	0.00
12,800.00	90.12	0.00	7,070.09	5,742.13	-209.25	5,745.30	0.00	0.00	0.00
12,900.00	90.12	0.00	7,069.89	5,842.13	-209.25	5,845.28	0.00	0.00	0.00
13,000.00	90.12	0.00	7,069.68	5,942.13	-209.25	5,945.25	0.00	0.00	0.00
13,100.00	90.12	0.00	7,069.48	6,042.13	-209.25	6,045.23	0.00	0.00	0.00
13,200.00	90.12	0.00	7,069.28	6,142.13	-209.25	6,145.21	0.00	0.00	0.00
13,300.00	90.12	0.00	7,069.07	6,242.13	-209.25	6,245.18	0.00	0.00	0.00
13,400.00	90.12	0.00	7,068.87	6,342.13	-209.25	6,345.16	0.00	0.00	0.00
13,500.00	90.12	0.00	7,068.67	6,442.13	-209.25	6,445.14	0.00	0.00	0.00
13,600.00	90.12	0.00	7,068.46	6,542.13	-209.25	6,545.11	0.00	0.00	0.00
13,700.00	90.12	0.00	7,068.26	6,642.12	-209.25	6,645.09	0.00	0.00	0.00
13,800.00	90.12	0.00	7,068.06	6,742.12	-209.25	6,745.07	0.00	0.00	0.00

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well BOYD 1N-32HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4931' & KB 16' @ 4947.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4931' & KB 16' @ 4947.00ft (ASSUMED)
<b>Site:</b>	BOYD 16-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	BOYD 1N-32HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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)	
13,900.00	90.12	0.00	7,067.85	6,842.12	-209.25	6,845.04	0.00	0.00	0.00	
14,000.00	90.12	0.00	7,067.65	6,942.12	-209.25	6,945.02	0.00	0.00	0.00	
14,100.00	90.12	0.00	7,067.45	7,042.12	-209.25	7,045.00	0.00	0.00	0.00	
14,200.00	90.12	0.00	7,067.25	7,142.12	-209.25	7,144.97	0.00	0.00	0.00	
14,300.00	90.12	0.00	7,067.04	7,242.12	-209.25	7,244.95	0.00	0.00	0.00	
14,400.00	90.12	0.00	7,066.84	7,342.12	-209.25	7,344.93	0.00	0.00	0.00	
14,500.00	90.12	0.00	7,066.64	7,442.12	-209.25	7,444.90	0.00	0.00	0.00	
14,600.00	90.12	0.00	7,066.43	7,542.12	-209.25	7,544.88	0.00	0.00	0.00	
14,700.00	90.12	0.00	7,066.23	7,642.12	-209.25	7,644.86	0.00	0.00	0.00	
14,800.00	90.12	0.00	7,066.03	7,742.12	-209.25	7,744.83	0.00	0.00	0.00	
14,900.00	90.12	0.00	7,065.82	7,842.12	-209.25	7,844.81	0.00	0.00	0.00	
15,000.00	90.12	0.00	7,065.62	7,942.12	-209.25	7,944.79	0.00	0.00	0.00	
15,100.00	90.12	0.00	7,065.42	8,042.12	-209.25	8,044.76	0.00	0.00	0.00	
15,200.00	90.12	0.00	7,065.21	8,142.12	-209.25	8,144.74	0.00	0.00	0.00	
15,300.00	90.12	0.00	7,065.01	8,242.12	-209.25	8,244.72	0.00	0.00	0.00	
15,400.00	90.12	0.00	7,064.81	8,342.12	-209.25	8,344.69	0.00	0.00	0.00	
15,500.00	90.12	0.00	7,064.60	8,442.12	-209.25	8,444.67	0.00	0.00	0.00	
15,600.00	90.12	0.00	7,064.40	8,542.12	-209.25	8,544.65	0.00	0.00	0.00	
15,700.00	90.12	0.00	7,064.20	8,642.12	-209.25	8,644.62	0.00	0.00	0.00	
15,800.00	90.12	0.00	7,063.99	8,742.12	-209.25	8,744.60	0.00	0.00	0.00	
15,900.00	90.12	0.00	7,063.79	8,842.12	-209.25	8,844.58	0.00	0.00	0.00	
16,000.00	90.12	0.00	7,063.59	8,942.12	-209.25	8,944.55	0.00	0.00	0.00	
16,100.00	90.12	0.00	7,063.38	9,042.12	-209.25	9,044.53	0.00	0.00	0.00	
16,200.00	90.12	0.00	7,063.18	9,142.12	-209.25	9,144.51	0.00	0.00	0.00	
16,300.00	90.12	0.00	7,062.98	9,242.12	-209.25	9,244.48	0.00	0.00	0.00	
16,400.00	90.12	0.00	7,062.77	9,342.12	-209.25	9,344.46	0.00	0.00	0.00	
16,500.00	90.12	0.00	7,062.57	9,442.12	-209.25	9,444.44	0.00	0.00	0.00	
16,600.00	90.12	0.00	7,062.37	9,542.12	-209.25	9,544.41	0.00	0.00	0.00	
16,700.00	90.12	0.00	7,062.16	9,642.12	-209.25	9,644.39	0.00	0.00	0.00	
16,780.48	90.12	0.00	7,062.00	9,722.60	-209.25	9,724.85	0.00	0.00	0.00	
TD at 16780.48 - PBHL_BOYD 1N-32HZ(460' FNL 508' FEL)										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
PBHL_BOYD 1N-32HZ(- - hit/miss target - Shape - Point	0.00	0.00	7,062.00	9,722.60	-209.25	1,280,688.01	3,229,345.91	40.1009700	-104.6801310	

Casing Points						
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)		
1,055.00	1,055.00	9 5/8"	9.625	12.250		
7,431.98	7,081.00	7"(720' FSL 479' FEL)	7.000	7.500		
16,780.48	7,062.00	4 1/2"	4.500	6.125		

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well BOYD 1N-32HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4931' & KB 16' @ 4947.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4931' & KB 16' @ 4947.00ft (ASSUMED)
<b>Site:</b>	BOYD 16-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	BOYD 1N-32HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #1 PRELIMINARY		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,421.78	4,399.00	Sussex			
7,051.57	6,960.00	Sharon Springs			
7,099.78	6,988.00	Niobrara A			
7,372.14	7,078.00	Niobrara B			

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,355.00	1,355.00	0.00	0.00	Start Build 2.00	
1,854.93	1,852.40	-30.06	-31.45	Start 1165.91 hold at 1854.93 MD	
3,020.84	3,000.60	-169.94	-177.79	Start Drop -2.00	
3,520.78	3,498.00	-200.00	-209.25	Start 3010.04 hold at 3520.78 MD	
6,530.82	6,508.04	-200.00	-209.25	Start Build 10.00	
7,431.98	7,081.00	374.12	-209.25	Start 9348.49 hold at 7431.98 MD	
16,780.48	7,062.00	9,722.60	-209.25	TD at 16780.48	