

WELL DETAILS: BOYD 28C-32HZ

GL 4950' & KB 16 @ 4966.00ft (ASSUMED)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1270954.76	3227559.16	40.0742970	-104.6868370

SECTION DETAILS

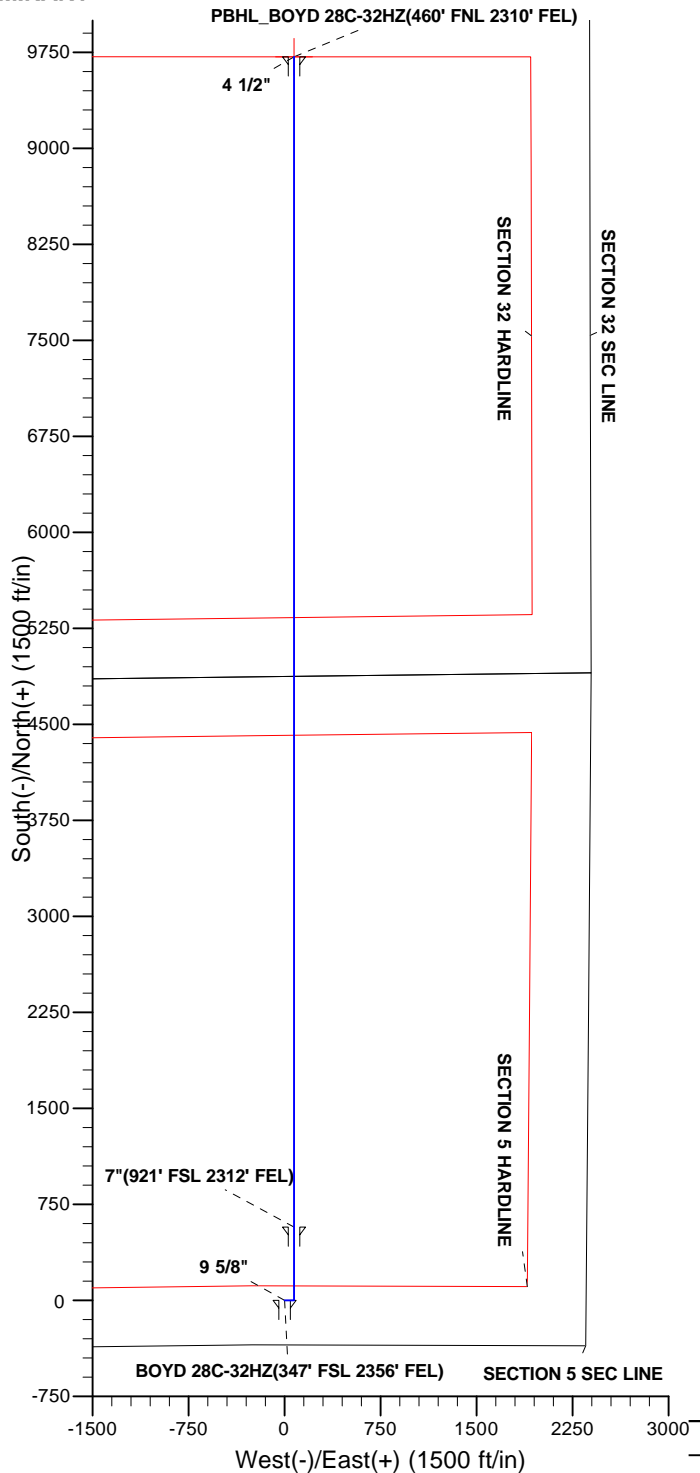
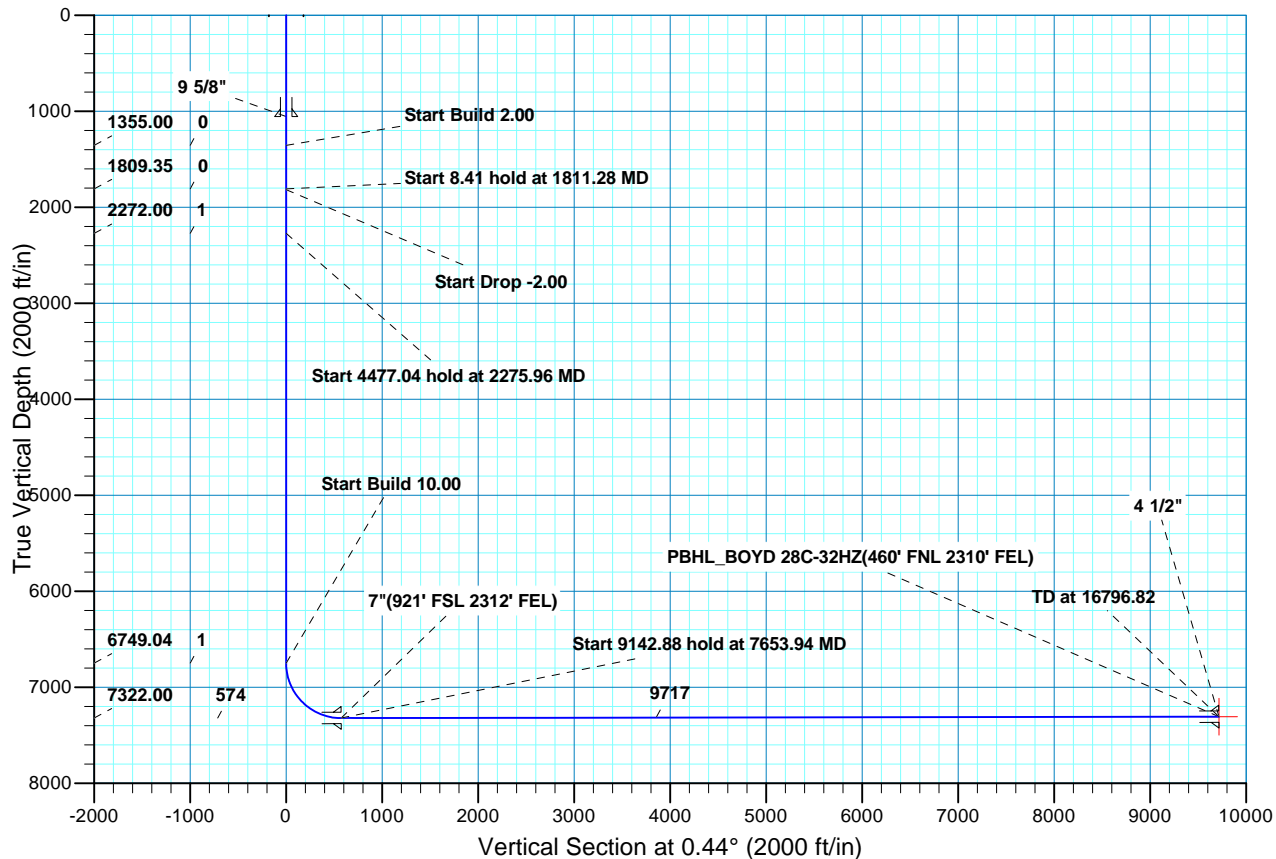
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1355.00	0.00	0.00	1355.00	0.00	0.00	0.00	0.00	0.00	
1811.28	9.13	90.00	1809.35	0.00	36.26	2.00	90.00	0.28	
1819.68	9.13	90.00	1817.65	0.00	37.59	0.00	0.00	0.29	
2275.96	0.00	0.00	2272.00	0.00	73.85	2.00	180.00	0.56	
6753.00	0.00	0.00	6749.04	0.00	73.85	0.00	0.00	0.56	
7653.94	90.09	0.00	7322.00	573.90	73.85	10.00	0.00	574.44	
16796.82	90.09	0.00	7307.00	9716.77	73.85	0.00	0.009717.05		PBHL_BOYD 28C-32HZ(460' FNL 2310' FEL)

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	Inc
4419.00	4422.96	Sussex	0.00
6941.00	6948.75	Sharon Springs	19.57
6969.00	6978.76	Niobrara A	22.58
7059.00	7080.50	Niobrara B	32.75
7143.00	7187.40	Niobrara C	43.44
7291.00	7463.67	Fort Hays	71.07
7317.00	7577.26	Codell	82.43

CASING DETAILS

TVD	MD	Name	Size
1055.00	1055.00	9 5/8"	9.625
7322.00	7653.94	7"	7.000
7307.00	16796.82	4 1/2"	4.500





# Scientific Drilling

## **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**BOYD 15-5HZ**

**BOYD 28C-32HZ**

**OH**

**Plan: PLAN #1 PRELIMINARY**

## **Standard Planning Report**

**26 February, 2013**

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well BOYD 28C-32HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4950' & KB 16 @ 4966.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4950' & KB 16 @ 4966.00ft (ASSUMED)
<b>Site:</b>	BOYD 15-5HZ	<b>North Reference:</b>	True
<b>Well:</b>	BOYD 28C-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 15-5HZ, SECTION 5 T1N R65W			
<b>Site Position:</b>		<b>Northing:</b>	1,270,911.07 usft	<b>Latitude:</b> 40.0741760
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,227,599.86 usft	<b>Longitude:</b> -104.6866930
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> 0.53 °

<b>Well</b>	BOYD 28C-32HZ, 347' FSL 2356' FEL			
<b>Well Position</b>	<b>+N/-S</b>	44.07 ft	<b>Northing:</b>	1,270,954.76 usft
	<b>+E/-W</b>	-40.30 ft	<b>Easting:</b>	3,227,559.16 usft
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	<b>Latitude:</b> 40.0742970
				<b>Longitude:</b> -104.6868370
				<b>Ground Level:</b> 4,950.00 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	2013/02/26	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	0.44

<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	
1,811.28	9.13	90.00	1,809.35	0.00	36.26	2.00	2.00	0.00	90.00	
1,819.68	9.13	90.00	1,817.65	0.00	37.59	0.00	0.00	0.00	0.00	
2,275.96	0.00	0.00	2,272.00	0.00	73.85	2.00	-2.00	0.00	180.00	
6,753.00	0.00	0.00	6,749.04	0.00	73.85	0.00	0.00	0.00	0.00	
7,653.94	90.09	0.00	7,322.00	573.90	73.85	10.00	10.00	0.00	0.00	
16,796.82	90.09	0.00	7,307.00	9,716.77	73.85	0.00	0.00	0.00	0.00	PBHL_BOYD 28C-32

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well BOYD 28C-32HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4950' & KB 16 @ 4966.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4950' & KB 16 @ 4966.00ft (ASSUMED)
<b>Site:</b>	BOYD 15-5HZ	<b>North Reference:</b>	True
<b>Well:</b>	BOYD 28C-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
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
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
1,055.00	0.00	0.00	1,055.00	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
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
1,355.00	0.00	0.00	1,355.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 2.00</b>									
1,400.00	0.90	90.00	1,400.00	0.00	0.35	0.00	2.00	2.00	0.00
1,500.00	2.90	90.00	1,499.94	0.00	3.67	0.03	2.00	2.00	0.00
1,600.00	4.90	90.00	1,599.70	0.00	10.47	0.08	2.00	2.00	0.00
1,700.00	6.90	90.00	1,699.17	0.00	20.75	0.16	2.00	2.00	0.00
1,800.00	8.90	90.00	1,798.21	0.00	34.49	0.26	2.00	2.00	0.00
1,811.28	9.13	90.00	1,809.35	0.00	36.26	0.28	2.00	2.00	0.00
<b>Start 8.41 hold at 1811.28 MD</b>									
1,819.68	9.13	90.00	1,817.65	0.00	37.59	0.29	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
1,900.00	7.52	90.00	1,897.12	0.00	49.22	0.37	2.00	-2.00	0.00
2,000.00	5.52	90.00	1,996.47	0.00	60.57	0.46	2.00	-2.00	0.00
2,100.00	3.52	90.00	2,096.15	0.00	68.45	0.52	2.00	-2.00	0.00
2,200.00	1.52	90.00	2,196.05	0.00	72.84	0.55	2.00	-2.00	0.00
2,275.96	0.00	0.00	2,272.00	0.00	73.85	0.56	2.00	-2.00	0.00
<b>Start 4477.04 hold at 2275.96 MD</b>									
2,300.00	0.00	0.00	2,296.04	0.00	73.85	0.56	0.00	0.00	0.00
2,400.00	0.00	0.00	2,396.04	0.00	73.85	0.56	0.00	0.00	0.00
2,500.00	0.00	0.00	2,496.04	0.00	73.85	0.56	0.00	0.00	0.00
2,600.00	0.00	0.00	2,596.04	0.00	73.85	0.56	0.00	0.00	0.00
2,700.00	0.00	0.00	2,696.04	0.00	73.85	0.56	0.00	0.00	0.00
2,800.00	0.00	0.00	2,796.04	0.00	73.85	0.56	0.00	0.00	0.00
2,900.00	0.00	0.00	2,896.04	0.00	73.85	0.56	0.00	0.00	0.00
3,000.00	0.00	0.00	2,996.04	0.00	73.85	0.56	0.00	0.00	0.00
3,100.00	0.00	0.00	3,096.04	0.00	73.85	0.56	0.00	0.00	0.00
3,200.00	0.00	0.00	3,196.04	0.00	73.85	0.56	0.00	0.00	0.00
3,300.00	0.00	0.00	3,296.04	0.00	73.85	0.56	0.00	0.00	0.00
3,400.00	0.00	0.00	3,396.04	0.00	73.85	0.56	0.00	0.00	0.00
3,500.00	0.00	0.00	3,496.04	0.00	73.85	0.56	0.00	0.00	0.00
3,600.00	0.00	0.00	3,596.04	0.00	73.85	0.56	0.00	0.00	0.00
3,700.00	0.00	0.00	3,696.04	0.00	73.85	0.56	0.00	0.00	0.00
3,800.00	0.00	0.00	3,796.04	0.00	73.85	0.56	0.00	0.00	0.00
3,900.00	0.00	0.00	3,896.04	0.00	73.85	0.56	0.00	0.00	0.00
4,000.00	0.00	0.00	3,996.04	0.00	73.85	0.56	0.00	0.00	0.00
4,100.00	0.00	0.00	4,096.04	0.00	73.85	0.56	0.00	0.00	0.00
4,200.00	0.00	0.00	4,196.04	0.00	73.85	0.56	0.00	0.00	0.00
4,300.00	0.00	0.00	4,296.04	0.00	73.85	0.56	0.00	0.00	0.00

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well BOYD 28C-32HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4950' & KB 16 @ 4966.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4950' & KB 16 @ 4966.00ft (ASSUMED)
<b>Site:</b>	BOYD 15-5HZ	<b>North Reference:</b>	True
<b>Well:</b>	BOYD 28C-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	4,396.04	0.00	73.85	0.56	0.00	0.00	0.00
4,422.96	0.00	0.00	4,419.00	0.00	73.85	0.56	0.00	0.00	0.00
<b>Sussex</b>									
4,500.00	0.00	0.00	4,496.04	0.00	73.85	0.56	0.00	0.00	0.00
4,600.00	0.00	0.00	4,596.04	0.00	73.85	0.56	0.00	0.00	0.00
4,700.00	0.00	0.00	4,696.04	0.00	73.85	0.56	0.00	0.00	0.00
4,800.00	0.00	0.00	4,796.04	0.00	73.85	0.56	0.00	0.00	0.00
4,900.00	0.00	0.00	4,896.04	0.00	73.85	0.56	0.00	0.00	0.00
5,000.00	0.00	0.00	4,996.04	0.00	73.85	0.56	0.00	0.00	0.00
5,100.00	0.00	0.00	5,096.04	0.00	73.85	0.56	0.00	0.00	0.00
5,200.00	0.00	0.00	5,196.04	0.00	73.85	0.56	0.00	0.00	0.00
5,300.00	0.00	0.00	5,296.04	0.00	73.85	0.56	0.00	0.00	0.00
5,400.00	0.00	0.00	5,396.04	0.00	73.85	0.56	0.00	0.00	0.00
5,500.00	0.00	0.00	5,496.04	0.00	73.85	0.56	0.00	0.00	0.00
5,600.00	0.00	0.00	5,596.04	0.00	73.85	0.56	0.00	0.00	0.00
5,700.00	0.00	0.00	5,696.04	0.00	73.85	0.56	0.00	0.00	0.00
5,800.00	0.00	0.00	5,796.04	0.00	73.85	0.56	0.00	0.00	0.00
5,900.00	0.00	0.00	5,896.04	0.00	73.85	0.56	0.00	0.00	0.00
6,000.00	0.00	0.00	5,996.04	0.00	73.85	0.56	0.00	0.00	0.00
6,100.00	0.00	0.00	6,096.04	0.00	73.85	0.56	0.00	0.00	0.00
6,200.00	0.00	0.00	6,196.04	0.00	73.85	0.56	0.00	0.00	0.00
6,300.00	0.00	0.00	6,296.04	0.00	73.85	0.56	0.00	0.00	0.00
6,400.00	0.00	0.00	6,396.04	0.00	73.85	0.56	0.00	0.00	0.00
6,500.00	0.00	0.00	6,496.04	0.00	73.85	0.56	0.00	0.00	0.00
6,600.00	0.00	0.00	6,596.04	0.00	73.85	0.56	0.00	0.00	0.00
6,700.00	0.00	0.00	6,696.04	0.00	73.85	0.56	0.00	0.00	0.00
6,753.00	0.00	0.00	6,749.04	0.00	73.85	0.56	0.00	0.00	0.00
<b>Start Build 10.00</b>									
6,800.00	4.70	0.00	6,795.99	1.93	73.85	2.49	10.00	10.00	0.00
6,900.00	14.70	0.00	6,894.43	18.75	73.85	19.31	10.00	10.00	0.00
6,948.75	19.57	0.00	6,941.00	33.11	73.85	33.67	10.00	10.00	0.00
<b>Sharon Springs</b>									
6,978.76	22.58	0.00	6,969.00	43.90	73.85	44.46	10.00	10.00	0.00
<b>Niobrara A</b>									
7,000.00	24.70	0.00	6,988.46	52.42	73.85	52.98	10.00	10.00	0.00
7,080.51	32.75	0.00	7,059.00	91.08	73.85	91.64	10.00	10.00	0.00
<b>Niobrara B</b>									
7,100.00	34.70	0.00	7,075.21	101.90	73.85	102.46	10.00	10.00	0.00
7,187.40	43.44	0.00	7,143.00	156.93	73.85	157.49	10.00	10.00	0.00
<b>Niobrara C</b>									
7,200.00	44.70	0.00	7,152.06	165.70	73.85	166.26	10.00	10.00	0.00
7,300.00	54.70	0.00	7,216.65	241.87	73.85	242.42	10.00	10.00	0.00
7,400.00	64.70	0.00	7,267.04	328.10	73.85	328.65	10.00	10.00	0.00
7,463.67	71.07	0.00	7,291.00	387.05	73.85	387.60	10.00	10.00	0.00
<b>Fort Hays</b>									
7,500.00	74.70	0.00	7,301.69	421.77	73.85	422.32	10.00	10.00	0.00
7,577.27	82.43	0.00	7,317.00	497.44	73.85	497.99	10.00	10.00	0.00
<b>Codell</b>									
7,600.00	84.70	0.00	7,319.55	520.03	73.85	520.58	10.00	10.00	0.00
7,653.94	90.09	0.00	7,322.00	573.90	73.85	574.44	10.00	10.00	0.00
<b>Start 9142.88 hold at 7653.94 MD - 7"(921' FSL 2312' FEL)</b>									
7,700.00	90.09	0.00	7,321.92	619.96	73.85	620.50	0.00	0.00	0.00
7,800.00	90.09	0.00	7,321.76	719.96	73.85	720.50	0.00	0.00	0.00

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well BOYD 28C-32HZ
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<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4950' & KB 16 @ 4966.00ft (ASSUMED)
<b>Site:</b>	BOYD 15-5HZ	<b>North Reference:</b>	True
<b>Well:</b>	BOYD 28C-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)
7,900.00	90.09	0.00	7,321.59	819.96	73.85	820.50	0.00	0.00	0.00
8,000.00	90.09	0.00	7,321.43	919.96	73.85	920.49	0.00	0.00	0.00
8,100.00	90.09	0.00	7,321.27	1,019.96	73.85	1,020.49	0.00	0.00	0.00
8,200.00	90.09	0.00	7,321.10	1,119.96	73.85	1,120.49	0.00	0.00	0.00
8,300.00	90.09	0.00	7,320.94	1,219.96	73.85	1,220.48	0.00	0.00	0.00
8,400.00	90.09	0.00	7,320.77	1,319.96	73.85	1,320.48	0.00	0.00	0.00
8,500.00	90.09	0.00	7,320.61	1,419.96	73.85	1,420.48	0.00	0.00	0.00
8,600.00	90.09	0.00	7,320.45	1,519.96	73.85	1,520.47	0.00	0.00	0.00
8,700.00	90.09	0.00	7,320.28	1,619.96	73.85	1,620.47	0.00	0.00	0.00
8,800.00	90.09	0.00	7,320.12	1,719.96	73.85	1,720.47	0.00	0.00	0.00
8,900.00	90.09	0.00	7,319.95	1,819.96	73.85	1,820.46	0.00	0.00	0.00
9,000.00	90.09	0.00	7,319.79	1,919.96	73.85	1,920.46	0.00	0.00	0.00
9,100.00	90.09	0.00	7,319.63	2,019.96	73.85	2,020.46	0.00	0.00	0.00
9,200.00	90.09	0.00	7,319.46	2,119.96	73.85	2,120.46	0.00	0.00	0.00
9,300.00	90.09	0.00	7,319.30	2,219.96	73.85	2,220.45	0.00	0.00	0.00
9,400.00	90.09	0.00	7,319.13	2,319.96	73.85	2,320.45	0.00	0.00	0.00
9,500.00	90.09	0.00	7,318.97	2,419.96	73.85	2,420.45	0.00	0.00	0.00
9,600.00	90.09	0.00	7,318.81	2,519.96	73.85	2,520.44	0.00	0.00	0.00
9,700.00	90.09	0.00	7,318.64	2,619.96	73.85	2,620.44	0.00	0.00	0.00
9,800.00	90.09	0.00	7,318.48	2,719.95	73.85	2,720.44	0.00	0.00	0.00
9,900.00	90.09	0.00	7,318.31	2,819.95	73.85	2,820.43	0.00	0.00	0.00
10,000.00	90.09	0.00	7,318.15	2,919.95	73.85	2,920.43	0.00	0.00	0.00
10,100.00	90.09	0.00	7,317.99	3,019.95	73.85	3,020.43	0.00	0.00	0.00
10,200.00	90.09	0.00	7,317.82	3,119.95	73.85	3,120.43	0.00	0.00	0.00
10,300.00	90.09	0.00	7,317.66	3,219.95	73.85	3,220.42	0.00	0.00	0.00
10,400.00	90.09	0.00	7,317.49	3,319.95	73.85	3,320.42	0.00	0.00	0.00
10,500.00	90.09	0.00	7,317.33	3,419.95	73.85	3,420.42	0.00	0.00	0.00
10,600.00	90.09	0.00	7,317.17	3,519.95	73.85	3,520.41	0.00	0.00	0.00
10,700.00	90.09	0.00	7,317.00	3,619.95	73.85	3,620.41	0.00	0.00	0.00
10,800.00	90.09	0.00	7,316.84	3,719.95	73.85	3,720.41	0.00	0.00	0.00
10,900.00	90.09	0.00	7,316.67	3,819.95	73.85	3,820.40	0.00	0.00	0.00
11,000.00	90.09	0.00	7,316.51	3,919.95	73.85	3,920.40	0.00	0.00	0.00
11,100.00	90.09	0.00	7,316.34	4,019.95	73.85	4,020.40	0.00	0.00	0.00
11,200.00	90.09	0.00	7,316.18	4,119.95	73.85	4,120.40	0.00	0.00	0.00
11,300.00	90.09	0.00	7,316.02	4,219.95	73.85	4,220.39	0.00	0.00	0.00
11,400.00	90.09	0.00	7,315.85	4,319.95	73.85	4,320.39	0.00	0.00	0.00
11,500.00	90.09	0.00	7,315.69	4,419.95	73.85	4,420.39	0.00	0.00	0.00
11,600.00	90.09	0.00	7,315.52	4,519.95	73.85	4,520.38	0.00	0.00	0.00
11,700.00	90.09	0.00	7,315.36	4,619.95	73.85	4,620.38	0.00	0.00	0.00
11,800.00	90.09	0.00	7,315.20	4,719.95	73.85	4,720.38	0.00	0.00	0.00
11,900.00	90.09	0.00	7,315.03	4,819.95	73.85	4,820.37	0.00	0.00	0.00
12,000.00	90.09	0.00	7,314.87	4,919.95	73.85	4,920.37	0.00	0.00	0.00
12,100.00	90.09	0.00	7,314.70	5,019.95	73.85	5,020.37	0.00	0.00	0.00
12,200.00	90.09	0.00	7,314.54	5,119.95	73.85	5,120.37	0.00	0.00	0.00
12,300.00	90.09	0.00	7,314.38	5,219.95	73.85	5,220.36	0.00	0.00	0.00
12,400.00	90.09	0.00	7,314.21	5,319.95	73.85	5,320.36	0.00	0.00	0.00
12,500.00	90.09	0.00	7,314.05	5,419.95	73.85	5,420.36	0.00	0.00	0.00
12,600.00	90.09	0.00	7,313.88	5,519.95	73.85	5,520.35	0.00	0.00	0.00
12,700.00	90.09	0.00	7,313.72	5,619.95	73.85	5,620.35	0.00	0.00	0.00
12,800.00	90.09	0.00	7,313.56	5,719.95	73.85	5,720.35	0.00	0.00	0.00
12,900.00	90.09	0.00	7,313.39	5,819.95	73.85	5,820.34	0.00	0.00	0.00
13,000.00	90.09	0.00	7,313.23	5,919.95	73.85	5,920.34	0.00	0.00	0.00
13,100.00	90.09	0.00	7,313.06	6,019.95	73.85	6,020.34	0.00	0.00	0.00
13,200.00	90.09	0.00	7,312.90	6,119.95	73.85	6,120.33	0.00	0.00	0.00

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well BOYD 28C-32HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4950' & KB 16 @ 4966.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4950' & KB 16 @ 4966.00ft (ASSUMED)
<b>Site:</b>	BOYD 15-5HZ	<b>North Reference:</b>	True
<b>Well:</b>	BOYD 28C-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)
13,300.00	90.09	0.00	7,312.74	6,219.95	73.85	6,220.33	0.00	0.00	0.00
13,400.00	90.09	0.00	7,312.57	6,319.95	73.85	6,320.33	0.00	0.00	0.00
13,500.00	90.09	0.00	7,312.41	6,419.95	73.85	6,420.33	0.00	0.00	0.00
13,600.00	90.09	0.00	7,312.24	6,519.95	73.85	6,520.32	0.00	0.00	0.00
13,700.00	90.09	0.00	7,312.08	6,619.95	73.85	6,620.32	0.00	0.00	0.00
13,800.00	90.09	0.00	7,311.92	6,719.95	73.85	6,720.32	0.00	0.00	0.00
13,900.00	90.09	0.00	7,311.75	6,819.95	73.85	6,820.31	0.00	0.00	0.00
14,000.00	90.09	0.00	7,311.59	6,919.95	73.85	6,920.31	0.00	0.00	0.00
14,100.00	90.09	0.00	7,311.42	7,019.95	73.85	7,020.31	0.00	0.00	0.00
14,200.00	90.09	0.00	7,311.26	7,119.95	73.85	7,120.30	0.00	0.00	0.00
14,300.00	90.09	0.00	7,311.10	7,219.95	73.85	7,220.30	0.00	0.00	0.00
14,400.00	90.09	0.00	7,310.93	7,319.95	73.85	7,320.30	0.00	0.00	0.00
14,500.00	90.09	0.00	7,310.77	7,419.95	73.85	7,420.30	0.00	0.00	0.00
14,600.00	90.09	0.00	7,310.60	7,519.95	73.85	7,520.29	0.00	0.00	0.00
14,700.00	90.09	0.00	7,310.44	7,619.95	73.85	7,620.29	0.00	0.00	0.00
14,800.00	90.09	0.00	7,310.28	7,719.95	73.85	7,720.29	0.00	0.00	0.00
14,900.00	90.09	0.00	7,310.11	7,819.95	73.85	7,820.28	0.00	0.00	0.00
15,000.00	90.09	0.00	7,309.95	7,919.95	73.85	7,920.28	0.00	0.00	0.00
15,100.00	90.09	0.00	7,309.78	8,019.95	73.85	8,020.28	0.00	0.00	0.00
15,200.00	90.09	0.00	7,309.62	8,119.95	73.85	8,120.27	0.00	0.00	0.00
15,300.00	90.09	0.00	7,309.46	8,219.95	73.85	8,220.27	0.00	0.00	0.00
15,400.00	90.09	0.00	7,309.29	8,319.95	73.85	8,320.27	0.00	0.00	0.00
15,500.00	90.09	0.00	7,309.13	8,419.95	73.85	8,420.27	0.00	0.00	0.00
15,600.00	90.09	0.00	7,308.96	8,519.95	73.85	8,520.26	0.00	0.00	0.00
15,700.00	90.09	0.00	7,308.80	8,619.95	73.85	8,620.26	0.00	0.00	0.00
15,800.00	90.09	0.00	7,308.64	8,719.95	73.85	8,720.26	0.00	0.00	0.00
15,900.00	90.09	0.00	7,308.47	8,819.95	73.85	8,820.25	0.00	0.00	0.00
16,000.00	90.09	0.00	7,308.31	8,919.95	73.85	8,920.25	0.00	0.00	0.00
16,100.00	90.09	0.00	7,308.14	9,019.95	73.85	9,020.25	0.00	0.00	0.00
16,200.00	90.09	0.00	7,307.98	9,119.95	73.85	9,120.24	0.00	0.00	0.00
16,300.00	90.09	0.00	7,307.82	9,219.95	73.85	9,220.24	0.00	0.00	0.00
16,400.00	90.09	0.00	7,307.65	9,319.95	73.85	9,320.24	0.00	0.00	0.00
16,500.00	90.09	0.00	7,307.49	9,419.95	73.85	9,420.24	0.00	0.00	0.00
16,600.00	90.09	0.00	7,307.32	9,519.95	73.85	9,520.23	0.00	0.00	0.00
16,700.00	90.09	0.00	7,307.16	9,619.95	73.85	9,620.23	0.00	0.00	0.00
16,796.82	90.09	0.00	7,307.00	9,716.77	73.85	9,717.05	0.00	0.00	0.00
TD at 16796.82 - 4 1/2" - PBHL_BOYD 28C-32HZ(460' FNL 2310' FEL)									

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_BOYD 28C-32HZ	0.00	0.00	7,307.00	9,716.77	73.85	1,280,671.78	3,227,543.91	40.1009710	-104.6865730
- plan hits target center									
- Point									

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well BOYD 28C-32HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4950' & KB 16 @ 4966.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4950' & KB 16 @ 4966.00ft (ASSUMED)
<b>Site:</b>	BOYD 15-5HZ	<b>North Reference:</b>	True
<b>Well:</b>	BOYD 28C-32HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #1 PRELIMINARY		

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	
7,653.94	7,322.00	7"(921' FSL 2312' FEL)	7.000	7.500	
16,796.82	7,307.00	4 1/2"	4.500	6.125	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,422.96	4,419.00	Sussex				
6,948.75	6,941.00	Sharon Springs				
6,978.76	6,969.00	Niobrara A				
7,080.51	7,059.00	Niobrara B				
7,187.40	7,143.00	Niobrara C				
7,463.67	7,291.00	Fort Hays				
7,577.27	7,317.00	Codell				

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	
1,811.28	1,809.35	0.00	36.26	Start 8.41 hold at 1811.28 MD	
1,819.68	1,817.65	0.00	37.59	Start Drop -2.00	
2,275.96	2,272.00	0.00	73.85	Start 4477.04 hold at 2275.96 MD	
6,753.00	6,749.04	0.00	73.85	Start Build 10.00	
7,653.94	7,322.00	573.90	73.85	Start 9142.88 hold at 7653.94 MD	
16,796.82	7,307.00	9,716.77	73.85	TD at 16796.82	