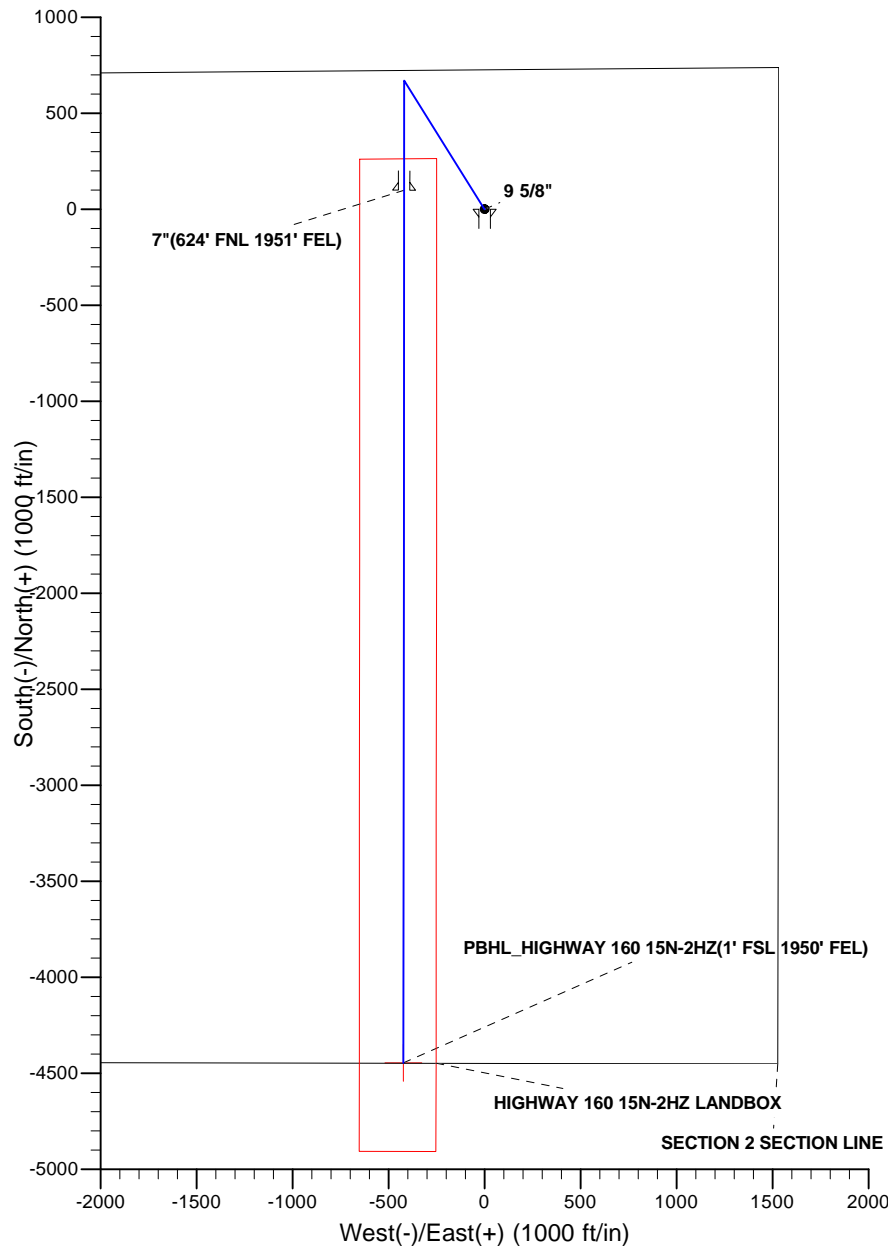
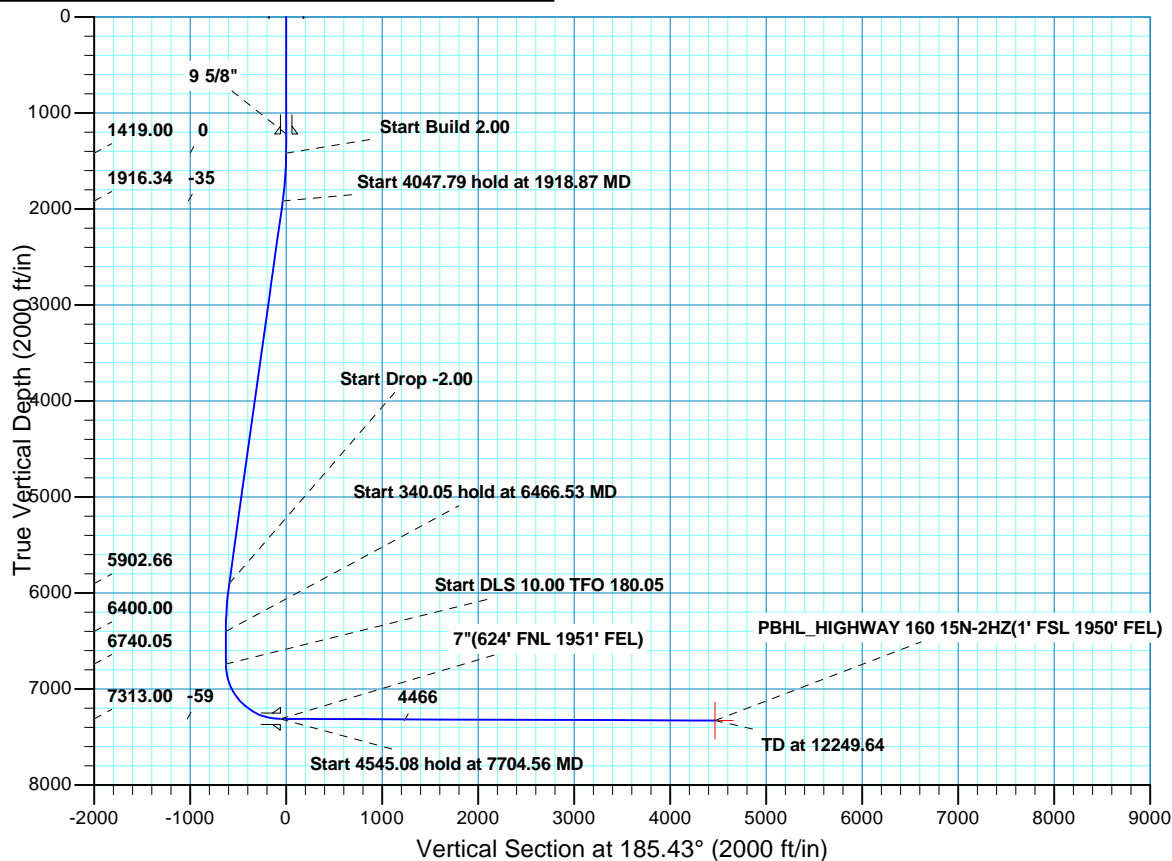


WELL DETAILS: HIGHWAY 160 15N-2HZ									
GL 5102 & KB 17' @ 5119.00ft (ASSUMED)									
		+N/-S 0.00	+E/-W 0.00	Northing 1274854.44	Easting 3212560.31	Latitude 40.0853669	Longitude -104.7403120		
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1419.00	0.00	0.00	1419.00	0.00	0.00	0.00	0.00	0.00	
1918.87	10.00	328.04	1916.34	36.91	-23.03	2.00	328.04	-34.56	
5966.66	10.00	328.04	5902.66	633.09	-394.99	0.00	0.00	-592.91	
6466.53	0.00	0.00	6400.00	670.00	-418.02	2.00	180.00	-627.47	
6806.58	0.00	0.00	6740.05	670.00	-418.02	0.00	0.00	-627.47	
7704.56	89.80	180.05	7313.00	99.06	-418.50	10.00	180.05	-59.04	
12249.64	89.80	180.05	7329.00	-4445.99	-422.30	0.00	0.00	4466.00	PBHL_HIGHWAY 160 15N-2HZ(1' FSL 1950' FEL)
FORMATION TOP DETAILS							CASING DETAILS		
TVDPath	MDPath	Formation		Inc			TVD	MD	Name Size
1169.00	1169.00	Fox Hills Base		0.00			1219.00	1219.00	9 5/8" 9.625
4421.00	4462.15	Parkman		10.00			7313.00	7704.56	7" 7.000
5459.00	5516.15	Sussex		10.00					
7170.00	7292.83	Sharon Springs		48.63					
7206.00	7350.71	Niobrara A		54.41					
7286.00	7529.96	Niobrara B		72.34					





# Scientific Drilling

## **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**HIGHWAY 160 2-2HZ PAD**

**HIGHWAY 160 15N-2HZ**

**OH**

**Plan: PLAN #1 PRELIMINARY**

## **Standard Planning Report**

**17 June, 2013**

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well HIGHWAY 160 15N-2HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 5102 & KB 17' @ 5119.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 5102 & KB 17' @ 5119.00ft (ASSUMED)
<b>Site:</b>	HIGHWAY 160 2-2HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	HIGHWAY 160 15N-2HZ	<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>	HIGHWAY 160 2-2HZ PAD, SECTION 2 T1N R66W			
<b>Site Position:</b>		<b>Northing:</b>	1,274,974.30 usft	<b>Latitude:</b> 40.0856960
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,212,558.72 usft	<b>Longitude:</b> -104.7403140
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> 0.49 °

<b>Well</b>	HIGHWAY 160 15N-2HZ, 726' FNL 1532' FEL			
<b>Well Position</b>	<b>+N/-S</b>	-119.86 ft	<b>Northing:</b>	1,274,854.44 usft
	<b>+E/-W</b>	0.56 ft	<b>Easting:</b>	3,212,560.31 usft
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	<b>Latitude:</b> 40.0853670
				<b>Longitude:</b> -104.7403120
				<b>Ground Level:</b> 5,102.00 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>
	BGGM2013	2013/06/17	8.58	66.72	52,687

<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	185.43

<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	
1,419.00	0.00	0.00	1,419.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,918.87	10.00	328.04	1,916.34	36.91	-23.03	2.00	2.00	0.00	328.04	
5,966.66	10.00	328.04	5,902.66	633.09	-394.99	0.00	0.00	0.00	0.00	
6,466.53	0.00	0.00	6,400.00	670.00	-418.02	2.00	-2.00	0.00	180.00	
6,806.58	0.00	0.00	6,740.05	670.00	-418.02	0.00	0.00	0.00	0.00	
7,704.56	89.80	180.05	7,313.00	99.06	-418.50	10.00	10.00	-20.04	180.05	
12,249.64	89.80	180.05	7,329.00	-4,445.99	-422.30	0.00	0.00	0.00	0.00	PBHL_HIGHWAY 160

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well HIGHWAY 160 15N-2HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 5102 & KB 17' @ 5119.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 5102 & KB 17' @ 5119.00ft (ASSUMED)
<b>Site:</b>	HIGHWAY 160 2-2HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	HIGHWAY 160 15N-2HZ	<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
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,169.00	0.00	0.00	1,169.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fox Hills Base</b>									
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,219.00	0.00	0.00	1,219.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</b>									
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
1,419.00	0.00	0.00	1,419.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 2.00</b>									
1,500.00	1.62	328.04	1,499.99	0.97	-0.61	-0.91	2.00	2.00	0.00
1,600.00	3.62	328.04	1,599.88	4.85	-3.03	-4.54	2.00	2.00	0.00
1,700.00	5.62	328.04	1,699.55	11.68	-7.29	-10.94	2.00	2.00	0.00
1,800.00	7.62	328.04	1,798.88	21.46	-13.39	-20.10	2.00	2.00	0.00
1,900.00	9.62	328.04	1,897.74	34.18	-21.32	-32.01	2.00	2.00	0.00
1,918.87	10.00	328.04	1,916.34	36.91	-23.03	-34.56	2.00	2.00	0.00
<b>Start 4047.79 hold at 1918.87 MD</b>									
2,000.00	10.00	328.04	1,996.24	48.86	-30.48	-45.75	0.00	0.00	0.00
2,100.00	10.00	328.04	2,094.72	63.58	-39.67	-59.55	0.00	0.00	0.00
2,200.00	10.00	328.04	2,193.20	78.31	-48.86	-73.34	0.00	0.00	0.00
2,300.00	10.00	328.04	2,291.68	93.04	-58.05	-87.14	0.00	0.00	0.00
2,400.00	10.00	328.04	2,390.16	107.77	-67.24	-100.93	0.00	0.00	0.00
2,500.00	10.00	328.04	2,488.64	122.50	-76.43	-114.72	0.00	0.00	0.00
2,600.00	10.00	328.04	2,587.12	137.23	-85.62	-128.52	0.00	0.00	0.00
2,700.00	10.00	328.04	2,685.61	151.96	-94.81	-142.31	0.00	0.00	0.00
2,800.00	10.00	328.04	2,784.09	166.69	-104.00	-156.10	0.00	0.00	0.00
2,900.00	10.00	328.04	2,882.57	181.41	-113.19	-169.90	0.00	0.00	0.00
3,000.00	10.00	328.04	2,981.05	196.14	-122.38	-183.69	0.00	0.00	0.00
3,100.00	10.00	328.04	3,079.53	210.87	-131.56	-197.49	0.00	0.00	0.00
3,200.00	10.00	328.04	3,178.01	225.60	-140.75	-211.28	0.00	0.00	0.00
3,300.00	10.00	328.04	3,276.50	240.33	-149.94	-225.07	0.00	0.00	0.00
3,400.00	10.00	328.04	3,374.98	255.06	-159.13	-238.87	0.00	0.00	0.00
3,500.00	10.00	328.04	3,473.46	269.79	-168.32	-252.66	0.00	0.00	0.00
3,600.00	10.00	328.04	3,571.94	284.52	-177.51	-266.46	0.00	0.00	0.00
3,700.00	10.00	328.04	3,670.42	299.24	-186.70	-280.25	0.00	0.00	0.00
3,800.00	10.00	328.04	3,768.90	313.97	-195.89	-294.04	0.00	0.00	0.00
3,900.00	10.00	328.04	3,867.39	328.70	-205.08	-307.84	0.00	0.00	0.00
4,000.00	10.00	328.04	3,965.87	343.43	-214.27	-321.63	0.00	0.00	0.00
4,100.00	10.00	328.04	4,064.35	358.16	-223.46	-335.42	0.00	0.00	0.00
4,200.00	10.00	328.04	4,162.83	372.89	-232.65	-349.22	0.00	0.00	0.00
4,300.00	10.00	328.04	4,261.31	387.62	-241.84	-363.01	0.00	0.00	0.00
4,400.00	10.00	328.04	4,359.79	402.35	-251.03	-376.81	0.00	0.00	0.00
4,462.15	10.00	328.04	4,421.00	411.50	-256.74	-385.38	0.00	0.00	0.00

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well HIGHWAY 160 15N-2HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 5102 & KB 17' @ 5119.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 5102 & KB 17' @ 5119.00ft (ASSUMED)
<b>Site:</b>	HIGHWAY 160 2-2HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	HIGHWAY 160 15N-2HZ	<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)
<b>Parkman</b>									
4,500.00	10.00	328.04	4,458.27	417.07	-260.22	-390.60	0.00	0.00	0.00
4,600.00	10.00	328.04	4,556.76	431.80	-269.41	-404.39	0.00	0.00	0.00
4,700.00	10.00	328.04	4,655.24	446.53	-278.60	-418.19	0.00	0.00	0.00
4,800.00	10.00	328.04	4,753.72	461.26	-287.78	-431.98	0.00	0.00	0.00
4,900.00	10.00	328.04	4,852.20	475.99	-296.97	-445.77	0.00	0.00	0.00
5,000.00	10.00	328.04	4,950.68	490.72	-306.16	-459.57	0.00	0.00	0.00
5,100.00	10.00	328.04	5,049.16	505.45	-315.35	-473.36	0.00	0.00	0.00
5,200.00	10.00	328.04	5,147.65	520.17	-324.54	-487.16	0.00	0.00	0.00
5,300.00	10.00	328.04	5,246.13	534.90	-333.73	-500.95	0.00	0.00	0.00
5,400.00	10.00	328.04	5,344.61	549.63	-342.92	-514.74	0.00	0.00	0.00
5,500.00	10.00	328.04	5,443.09	564.36	-352.11	-528.54	0.00	0.00	0.00
5,516.16	10.00	328.04	5,459.00	566.74	-353.60	-530.77	0.00	0.00	0.00
<b>Sussex</b>									
5,600.00	10.00	328.04	5,541.57	579.09	-361.30	-542.33	0.00	0.00	0.00
5,700.00	10.00	328.04	5,640.05	593.82	-370.49	-556.12	0.00	0.00	0.00
5,800.00	10.00	328.04	5,738.54	608.55	-379.68	-569.92	0.00	0.00	0.00
5,900.00	10.00	328.04	5,837.02	623.28	-388.87	-583.71	0.00	0.00	0.00
5,966.66	10.00	328.04	5,902.66	633.09	-394.99	-592.91	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
6,000.00	9.33	328.04	5,935.53	637.84	-397.96	-597.35	2.00	-2.00	0.00
6,100.00	7.33	328.04	6,034.47	650.13	-405.63	-608.87	2.00	-2.00	0.00
6,200.00	5.33	328.04	6,133.86	659.49	-411.46	-617.63	2.00	-2.00	0.00
6,300.00	3.33	328.04	6,233.57	665.89	-415.46	-623.63	2.00	-2.00	0.00
6,400.00	1.33	328.04	6,333.48	669.34	-417.61	-626.86	2.00	-2.00	0.00
6,466.53	0.00	0.00	6,400.00	670.00	-418.02	-627.47	2.00	-2.00	0.00
<b>Start 340.05 hold at 6466.53 MD</b>									
6,500.00	0.00	0.00	6,433.47	670.00	-418.02	-627.47	0.00	0.00	0.00
6,600.00	0.00	0.00	6,533.47	670.00	-418.02	-627.47	0.00	0.00	0.00
6,700.00	0.00	0.00	6,633.47	670.00	-418.02	-627.47	0.00	0.00	0.00
6,800.00	0.00	0.00	6,733.47	670.00	-418.02	-627.47	0.00	0.00	0.00
6,806.58	0.00	0.00	6,740.05	670.00	-418.02	-627.47	0.00	0.00	0.00
<b>Start DLS 10.00 TFO 180.05</b>									
6,900.00	9.34	180.05	6,833.06	662.40	-418.03	-619.90	10.00	10.00	0.00
7,000.00	19.34	180.05	6,929.82	637.66	-418.05	-595.27	10.00	10.00	0.00
7,100.00	29.34	180.05	7,020.81	596.49	-418.08	-554.29	10.00	10.00	0.00
7,200.00	39.34	180.05	7,103.28	540.15	-418.13	-498.19	10.00	10.00	0.00
7,292.83	48.63	180.05	7,170.00	475.76	-418.18	-434.08	10.00	10.00	0.00
<b>Sharon Springs</b>									
7,300.00	49.34	180.05	7,174.70	470.35	-418.19	-428.70	10.00	10.00	0.00
7,350.71	54.41	180.05	7,206.00	430.47	-418.22	-388.99	10.00	10.00	0.00
<b>Niobrara A</b>									
7,400.00	59.34	180.05	7,232.92	389.20	-418.25	-347.91	10.00	10.00	0.00
7,500.00	69.34	180.05	7,276.17	299.17	-418.33	-258.28	10.00	10.00	0.00
7,529.96	72.34	180.05	7,286.00	270.88	-418.35	-230.11	10.00	10.00	0.00
<b>Niobrara B</b>									
7,600.00	79.34	180.05	7,303.12	203.01	-418.41	-162.53	10.00	10.00	0.00
7,700.00	89.34	180.05	7,312.97	103.62	-418.49	-63.58	10.00	10.00	0.00
7,704.56	89.80	180.05	7,313.00	99.06	-418.50	-59.04	10.00	10.00	0.00
<b>Start 4545.08 hold at 7704.56 MD - 7"(624' FNL 1951' FEL)</b>									
7,800.00	89.80	180.05	7,313.34	3.62	-418.58	35.98	0.00	0.00	0.00
7,900.00	89.80	180.05	7,313.69	-96.38	-418.66	135.53	0.00	0.00	0.00
8,000.00	89.80	180.05	7,314.04	-196.38	-418.74	235.09	0.00	0.00	0.00

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well HIGHWAY 160 15N-2HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 5102 & KB 17' @ 5119.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 5102 & KB 17' @ 5119.00ft (ASSUMED)
<b>Site:</b>	HIGHWAY 160 2-2HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	HIGHWAY 160 15N-2HZ	<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)
8,100.00	89.80	180.05	7,314.40	-296.38	-418.83	334.65	0.00	0.00	0.00
8,200.00	89.80	180.05	7,314.75	-396.38	-418.91	434.21	0.00	0.00	0.00
8,300.00	89.80	180.05	7,315.10	-496.38	-419.00	533.77	0.00	0.00	0.00
8,400.00	89.80	180.05	7,315.45	-596.37	-419.08	633.33	0.00	0.00	0.00
8,500.00	89.80	180.05	7,315.80	-696.37	-419.16	732.89	0.00	0.00	0.00
8,600.00	89.80	180.05	7,316.16	-796.37	-419.25	832.45	0.00	0.00	0.00
8,700.00	89.80	180.05	7,316.51	-896.37	-419.33	932.01	0.00	0.00	0.00
8,800.00	89.80	180.05	7,316.86	-996.37	-419.41	1,031.57	0.00	0.00	0.00
8,900.00	89.80	180.05	7,317.21	-1,096.37	-419.50	1,131.13	0.00	0.00	0.00
9,000.00	89.80	180.05	7,317.56	-1,196.37	-419.58	1,230.69	0.00	0.00	0.00
9,100.00	89.80	180.05	7,317.92	-1,296.37	-419.66	1,330.24	0.00	0.00	0.00
9,200.00	89.80	180.05	7,318.27	-1,396.37	-419.75	1,429.80	0.00	0.00	0.00
9,300.00	89.80	180.05	7,318.62	-1,496.37	-419.83	1,529.36	0.00	0.00	0.00
9,400.00	89.80	180.05	7,318.97	-1,596.37	-419.92	1,628.92	0.00	0.00	0.00
9,500.00	89.80	180.05	7,319.32	-1,696.37	-420.00	1,728.48	0.00	0.00	0.00
9,600.00	89.80	180.05	7,319.68	-1,796.37	-420.08	1,828.04	0.00	0.00	0.00
9,700.00	89.80	180.05	7,320.03	-1,896.37	-420.17	1,927.60	0.00	0.00	0.00
9,800.00	89.80	180.05	7,320.38	-1,996.37	-420.25	2,027.16	0.00	0.00	0.00
9,900.00	89.80	180.05	7,320.73	-2,096.36	-420.33	2,126.72	0.00	0.00	0.00
10,000.00	89.80	180.05	7,321.08	-2,196.36	-420.42	2,226.28	0.00	0.00	0.00
10,100.00	89.80	180.05	7,321.43	-2,296.36	-420.50	2,325.84	0.00	0.00	0.00
10,200.00	89.80	180.05	7,321.79	-2,396.36	-420.58	2,425.40	0.00	0.00	0.00
10,300.00	89.80	180.05	7,322.14	-2,496.36	-420.67	2,524.95	0.00	0.00	0.00
10,400.00	89.80	180.05	7,322.49	-2,596.36	-420.75	2,624.51	0.00	0.00	0.00
10,500.00	89.80	180.05	7,322.84	-2,696.36	-420.84	2,724.07	0.00	0.00	0.00
10,600.00	89.80	180.05	7,323.19	-2,796.36	-420.92	2,823.63	0.00	0.00	0.00
10,700.00	89.80	180.05	7,323.55	-2,896.36	-421.00	2,923.19	0.00	0.00	0.00
10,800.00	89.80	180.05	7,323.90	-2,996.36	-421.09	3,022.75	0.00	0.00	0.00
10,900.00	89.80	180.05	7,324.25	-3,096.36	-421.17	3,122.31	0.00	0.00	0.00
11,000.00	89.80	180.05	7,324.60	-3,196.36	-421.25	3,221.87	0.00	0.00	0.00
11,100.00	89.80	180.05	7,324.95	-3,296.36	-421.34	3,321.43	0.00	0.00	0.00
11,200.00	89.80	180.05	7,325.31	-3,396.36	-421.42	3,420.99	0.00	0.00	0.00
11,300.00	89.80	180.05	7,325.66	-3,496.36	-421.50	3,520.55	0.00	0.00	0.00
11,400.00	89.80	180.05	7,326.01	-3,596.36	-421.59	3,620.11	0.00	0.00	0.00
11,500.00	89.80	180.05	7,326.36	-3,696.35	-421.67	3,719.67	0.00	0.00	0.00
11,600.00	89.80	180.05	7,326.71	-3,796.35	-421.76	3,819.22	0.00	0.00	0.00
11,700.00	89.80	180.05	7,327.07	-3,896.35	-421.84	3,918.78	0.00	0.00	0.00
11,800.00	89.80	180.05	7,327.42	-3,996.35	-421.92	4,018.34	0.00	0.00	0.00
11,900.00	89.80	180.05	7,327.77	-4,096.35	-422.01	4,117.90	0.00	0.00	0.00
12,000.00	89.80	180.05	7,328.12	-4,196.35	-422.09	4,217.46	0.00	0.00	0.00
12,100.00	89.80	180.05	7,328.47	-4,296.35	-422.17	4,317.02	0.00	0.00	0.00
12,200.00	89.80	180.05	7,328.83	-4,396.35	-422.26	4,416.58	0.00	0.00	0.00
12,249.64	89.80	180.05	7,329.00	-4,445.99	-422.30	4,466.00	0.00	0.00	0.00
TD at 12249.64 - PBHL_HIGHWAY 160 15N-2HZ(1' FSL 1950' FEL)									

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well HIGHWAY 160 15N-2HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 5102 & KB 17' @ 5119.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 5102 & KB 17' @ 5119.00ft (ASSUMED)
<b>Site:</b>	HIGHWAY 160 2-2HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	HIGHWAY 160 15N-2HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #1 PRELIMINARY		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
- Shape									
PBHL_HIGHWAY 160 1	0.00	0.00	7,329.00	-4,445.99	-422.30	1,270,405.01	3,212,176.12	40.0731620	-104.7418210
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(ft)	(ft)			(in)	(in)
1,219.00	1,219.00	9 5/8"		9.625	12.250
7,704.56	7,313.00	7"(624' FNL 1951' FEL)		7.000	7.500

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(ft)	(ft)			(°)	(°)	
1,169.00	1,169.00	Fox Hills Base				
4,462.15	4,421.00	Parkman				
5,516.16	5,459.00	Sussex				
7,292.83	7,170.00	Sharon Springs				
7,350.71	7,206.00	Niobrara A				
7,529.96	7,286.00	Niobrara B				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S	+E/-W		
(ft)	(ft)	(ft)	(ft)		
1,419.00	1,419.00	0.00	0.00	Start Build 2.00	
1,918.87	1,916.34	36.91	-23.03	Start 4047.79 hold at 1918.87 MD	
5,966.66	5,902.66	633.09	-394.99	Start Drop -2.00	
6,466.53	6,400.00	670.00	-418.02	Start 340.05 hold at 6466.53 MD	
6,806.58	6,740.05	670.00	-418.02	Start DLS 10.00 TFO 180.05	
7,704.56	7,313.00	99.06	-418.50	Start 4545.08 hold at 7704.56 MD	
12,249.64	7,329.00	-4,445.99	-422.30	TD at 12249.64	