

WELL DETAILS: HIGHWAY 160 37N-2HZ

GL 5102' & KB 17' @ 5119.00ft (ASSUMED)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1274914.18	3212559.52	40.0855310	-104.7403130

SECTION DETAILS

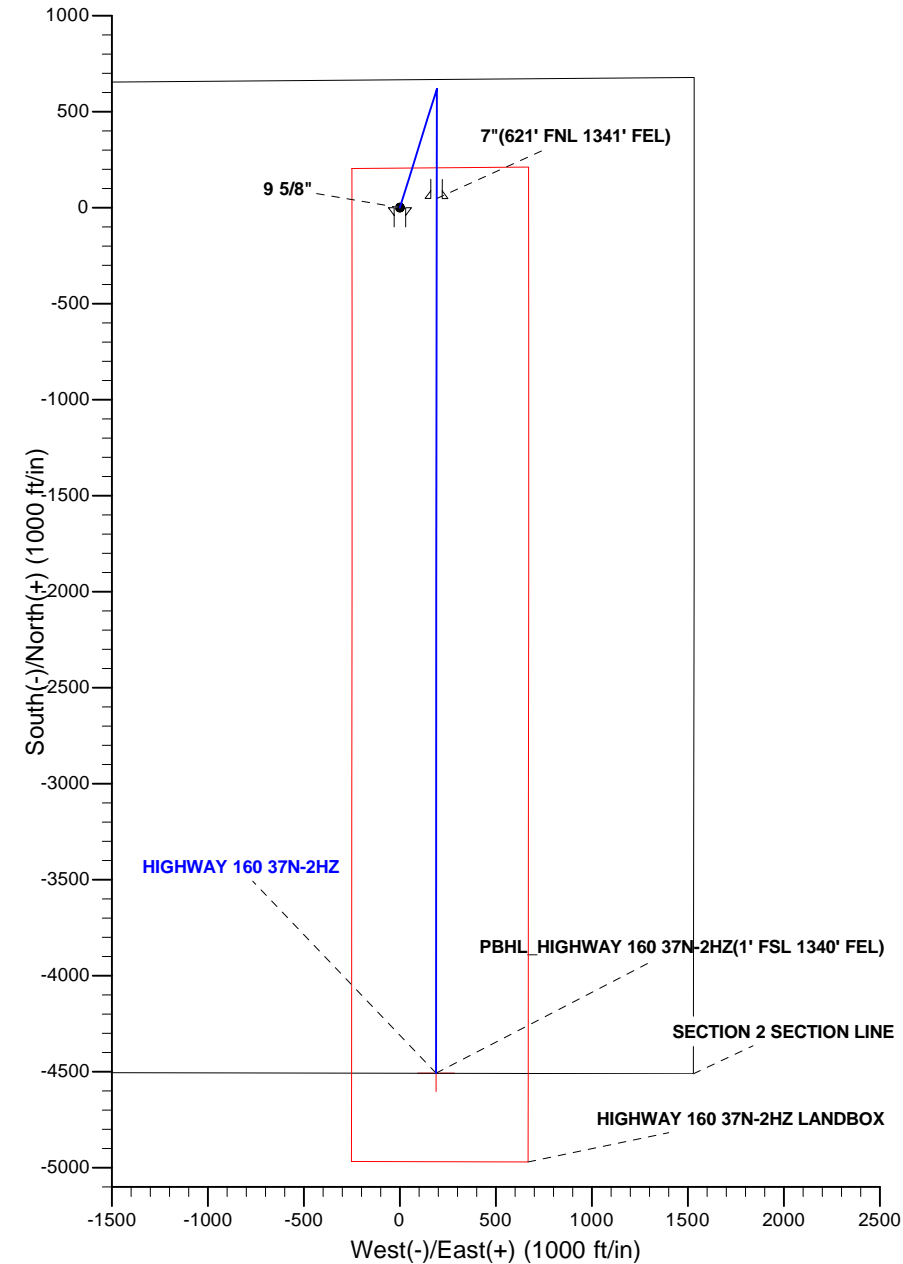
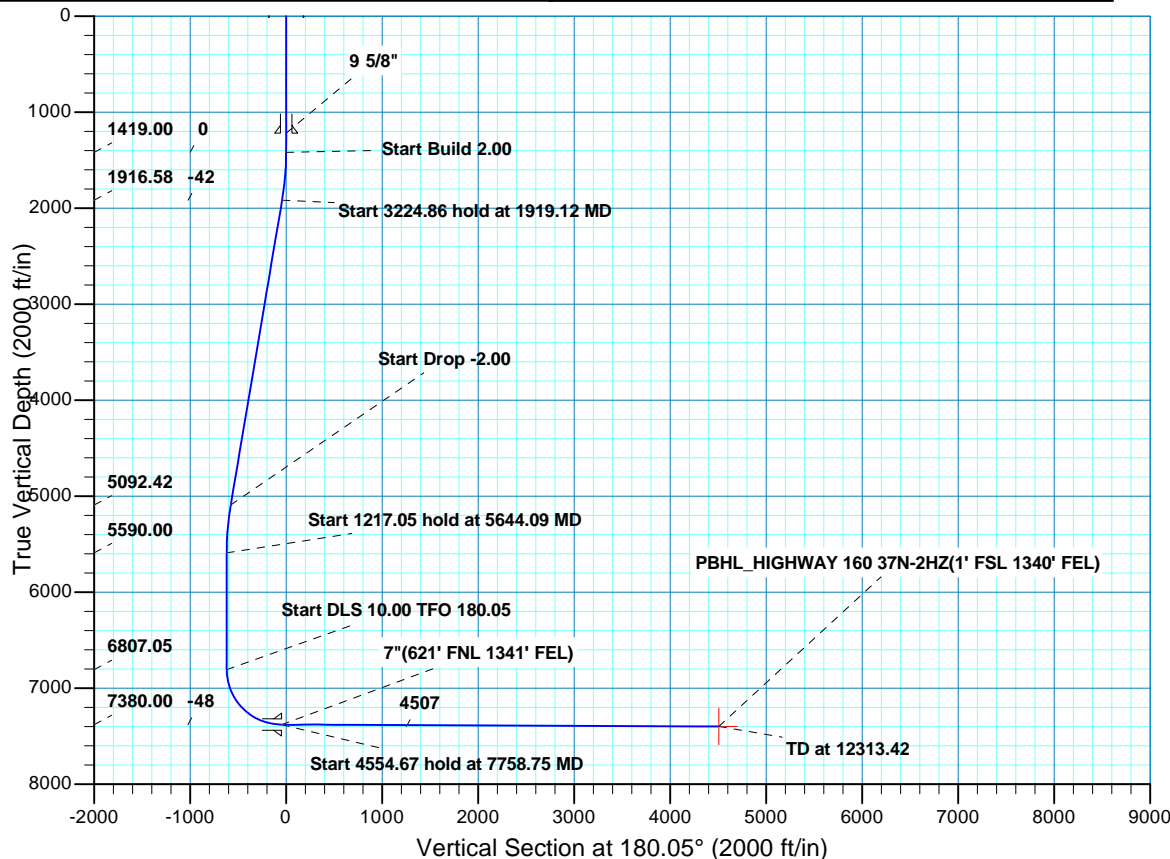
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1419.00	0.00	0.00	1419.00	0.00	0.00	0.00	0.00	0.00	
1919.12	10.00	17.28	1916.58	41.58	12.93	2.00	17.28	-41.59	
5143.97	10.00	17.28	5092.42	576.42	179.29	0.00	0.00	-576.58	
5644.09	0.00	0.00	5590.00	618.00	192.22	2.00	180.00	-618.17	
6861.14	0.00	0.00	6807.05	618.00	192.22	0.00	0.00	-618.17	
7758.75	89.76	180.05	7380.00	47.43	191.76	10.00	180.05	-47.60	
12313.42	89.76	180.05	7399.00	-4507.20	188.06	0.00	0.00	4507.03	PBHL_HIGHWAY 160 37N-2HZ(1' FSL 1340' FEL)

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	Inc
1169.00	1169.00	Fox Hills Base	0.00
4421.00	4462.19	Parkman	10.00
5459.00	5513.04	Sussex	2.62
7170.00	7254.20	Sharon Springs	39.31
7206.00	7302.45	Niobrara A	44.13
7286.00	7428.26	Niobrara B	56.71
7369.00	7648.65	Niobrara C	78.75

CASING DETAILS

TVD	MD	Name	Size
1219.00	1219.00	9 5/8"	9.625
7380.00	7758.75	7"	7.000





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

HIGHWAY 160 2-2HZ PAD

HIGHWAY 160 37N-2HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

17 June, 2013

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well HIGHWAY 160 37N-2HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5102' & KB 17' @ 5119.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5102' & KB 17' @ 5119.00ft (ASSUMED)
Site:	HIGHWAY 160 2-2HZ PAD	North Reference:	True
Well:	HIGHWAY 160 37N-2HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 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	HIGHWAY 160 2-2HZ PAD, SECTION 2 T1N R66W			
Site Position:		Northing:	1,274,974.30 usft	Latitude: 40.0856960
From:	Lat/Long	Easting:	3,212,558.72 usft	Longitude: -104.7403140
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: 0.49 °

Well	HIGHWAY 160 37N-2HZ, 666' FNL 1532' FEL			
Well Position	+N/-S	-60.12 ft	Northing:	1,274,914.18 usft
	+E/-W	0.28 ft	Easting:	3,212,559.52 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Ground Level: 5,102.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	2013/06/17	8.58	66.72	52,687

Design	PLAN #1 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	180.05

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	
1,419.00	0.00	0.00	1,419.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,919.12	10.00	17.28	1,916.58	41.58	12.93	2.00	2.00	0.00	17.28	
5,143.97	10.00	17.28	5,092.42	576.42	179.29	0.00	0.00	0.00	0.00	
5,644.09	0.00	0.00	5,590.00	618.00	192.22	2.00	-2.00	0.00	180.00	
6,861.14	0.00	0.00	6,807.05	618.00	192.22	0.00	0.00	0.00	0.00	
7,758.75	89.76	180.05	7,380.00	47.43	191.76	10.00	10.00	-20.05	180.05	
12,313.42	89.76	180.05	7,399.00	-4,507.20	188.06	0.00	0.00	0.00	0.00	PBHL_HIGHWAY 160

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well HIGHWAY 160 37N-2HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5102' & KB 17' @ 5119.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5102' & KB 17' @ 5119.00ft (ASSUMED)
Site:	HIGHWAY 160 2-2HZ PAD	North Reference:	True
Well:	HIGHWAY 160 37N-2HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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
Fox Hills Base									
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
9 5/8"									
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
Start Build 2.00									
1,500.00	1.62	17.28	1,499.99	1.09	0.34	-1.09	2.00	2.00	0.00
1,600.00	3.62	17.28	1,599.88	5.46	1.70	-5.46	2.00	2.00	0.00
1,700.00	5.62	17.28	1,699.55	13.15	4.09	-13.15	2.00	2.00	0.00
1,800.00	7.62	17.28	1,798.88	24.16	7.51	-24.16	2.00	2.00	0.00
1,900.00	9.62	17.28	1,897.74	38.47	11.96	-38.48	2.00	2.00	0.00
1,919.12	10.00	17.28	1,916.58	41.58	12.93	-41.59	2.00	2.00	0.00
Start 3224.86 hold at 1919.12 MD									
2,000.00	10.00	17.28	1,996.23	54.99	17.10	-55.01	0.00	0.00	0.00
2,100.00	10.00	17.28	2,094.71	71.58	22.26	-71.60	0.00	0.00	0.00
2,200.00	10.00	17.28	2,193.19	88.16	27.42	-88.19	0.00	0.00	0.00
2,300.00	10.00	17.28	2,291.67	104.75	32.58	-104.78	0.00	0.00	0.00
2,400.00	10.00	17.28	2,390.15	121.33	37.74	-121.37	0.00	0.00	0.00
2,500.00	10.00	17.28	2,488.63	137.92	42.90	-137.96	0.00	0.00	0.00
2,600.00	10.00	17.28	2,587.11	154.50	48.06	-154.54	0.00	0.00	0.00
2,700.00	10.00	17.28	2,685.59	171.09	53.21	-171.13	0.00	0.00	0.00
2,800.00	10.00	17.28	2,784.07	187.67	58.37	-187.72	0.00	0.00	0.00
2,900.00	10.00	17.28	2,882.56	204.26	63.53	-204.31	0.00	0.00	0.00
3,000.00	10.00	17.28	2,981.04	220.84	68.69	-220.90	0.00	0.00	0.00
3,100.00	10.00	17.28	3,079.52	237.43	73.85	-237.49	0.00	0.00	0.00
3,200.00	10.00	17.28	3,178.00	254.01	79.01	-254.08	0.00	0.00	0.00
3,300.00	10.00	17.28	3,276.48	270.60	84.17	-270.67	0.00	0.00	0.00
3,400.00	10.00	17.28	3,374.96	287.18	89.32	-287.26	0.00	0.00	0.00
3,500.00	10.00	17.28	3,473.44	303.77	94.48	-303.85	0.00	0.00	0.00
3,600.00	10.00	17.28	3,571.92	320.35	99.64	-320.44	0.00	0.00	0.00
3,700.00	10.00	17.28	3,670.40	336.94	104.80	-337.03	0.00	0.00	0.00
3,800.00	10.00	17.28	3,768.88	353.52	109.96	-353.62	0.00	0.00	0.00
3,900.00	10.00	17.28	3,867.36	370.11	115.12	-370.21	0.00	0.00	0.00
4,000.00	10.00	17.28	3,965.84	386.69	120.28	-386.80	0.00	0.00	0.00
4,100.00	10.00	17.28	4,064.32	403.28	125.43	-403.39	0.00	0.00	0.00
4,200.00	10.00	17.28	4,162.80	419.86	130.59	-419.98	0.00	0.00	0.00
4,300.00	10.00	17.28	4,261.28	436.45	135.75	-436.57	0.00	0.00	0.00
4,400.00	10.00	17.28	4,359.76	453.03	140.91	-453.16	0.00	0.00	0.00
4,462.19	10.00	17.28	4,421.00	463.35	144.12	-463.47	0.00	0.00	0.00

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Site:	HIGHWAY 160 2-2HZ PAD	North Reference:	True
Well:	HIGHWAY 160 37N-2HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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)
Parkman									
4,500.00	10.00	17.28	4,458.24	469.62	146.07	-469.75	0.00	0.00	0.00
4,600.00	10.00	17.28	4,556.72	486.20	151.23	-486.34	0.00	0.00	0.00
4,700.00	10.00	17.28	4,655.20	502.79	156.39	-502.93	0.00	0.00	0.00
4,800.00	10.00	17.28	4,753.68	519.37	161.54	-519.51	0.00	0.00	0.00
4,900.00	10.00	17.28	4,852.16	535.96	166.70	-536.10	0.00	0.00	0.00
5,000.00	10.00	17.28	4,950.64	552.54	171.86	-552.69	0.00	0.00	0.00
5,100.00	10.00	17.28	5,049.12	569.13	177.02	-569.28	0.00	0.00	0.00
5,143.97	10.00	17.28	5,092.42	576.42	179.29	-576.58	0.00	0.00	0.00
Start Drop -2.00									
5,200.00	8.88	17.28	5,147.69	585.20	182.02	-585.36	2.00	-2.00	0.00
5,300.00	6.88	17.28	5,246.74	598.29	186.09	-598.45	2.00	-2.00	0.00
5,400.00	4.88	17.28	5,346.21	608.08	189.13	-608.24	2.00	-2.00	0.00
5,500.00	2.88	17.28	5,445.97	614.54	191.14	-614.71	2.00	-2.00	0.00
5,513.04	2.62	17.28	5,459.00	615.14	191.33	-615.31	2.00	-2.00	0.00
Sussex									
5,600.00	0.88	17.28	5,545.91	617.68	192.12	-617.84	2.00	-2.00	0.00
5,644.09	0.00	0.00	5,590.00	618.00	192.22	-618.17	2.00	-2.00	0.00
Start 1217.05 hold at 5644.09 MD									
5,700.00	0.00	0.00	5,645.91	618.00	192.22	-618.17	0.00	0.00	0.00
5,800.00	0.00	0.00	5,745.91	618.00	192.22	-618.17	0.00	0.00	0.00
5,900.00	0.00	0.00	5,845.91	618.00	192.22	-618.17	0.00	0.00	0.00
6,000.00	0.00	0.00	5,945.91	618.00	192.22	-618.17	0.00	0.00	0.00
6,100.00	0.00	0.00	6,045.91	618.00	192.22	-618.17	0.00	0.00	0.00
6,200.00	0.00	0.00	6,145.91	618.00	192.22	-618.17	0.00	0.00	0.00
6,300.00	0.00	0.00	6,245.91	618.00	192.22	-618.17	0.00	0.00	0.00
6,400.00	0.00	0.00	6,345.91	618.00	192.22	-618.17	0.00	0.00	0.00
6,500.00	0.00	0.00	6,445.91	618.00	192.22	-618.17	0.00	0.00	0.00
6,600.00	0.00	0.00	6,545.91	618.00	192.22	-618.17	0.00	0.00	0.00
6,700.00	0.00	0.00	6,645.91	618.00	192.22	-618.17	0.00	0.00	0.00
6,800.00	0.00	0.00	6,745.91	618.00	192.22	-618.17	0.00	0.00	0.00
6,861.14	0.00	0.00	6,807.05	618.00	192.22	-618.17	0.00	0.00	0.00
Start DLS 10.00 TFO 180.05									
6,900.00	3.89	180.05	6,845.88	616.68	192.22	-616.85	10.00	10.00	0.00
7,000.00	13.89	180.05	6,944.56	601.25	192.21	-601.42	10.00	10.00	0.00
7,100.00	23.89	180.05	7,039.05	568.93	192.18	-569.09	10.00	10.00	0.00
7,200.00	33.89	180.05	7,126.50	520.68	192.14	-520.85	10.00	10.00	0.00
7,254.20	39.31	180.05	7,170.00	488.38	192.11	-488.55	10.00	10.00	0.00
Sharon Springs									
7,300.00	43.89	180.05	7,204.24	457.98	192.09	-458.15	10.00	10.00	0.00
7,302.45	44.13	180.05	7,206.00	456.28	192.09	-456.45	10.00	10.00	0.00
Niobrara A									
7,400.00	53.89	180.05	7,269.91	382.74	192.03	-382.91	10.00	10.00	0.00
7,428.26	56.71	180.05	7,286.00	359.51	192.01	-359.67	10.00	10.00	0.00
Niobrara B									
7,500.00	63.89	180.05	7,321.52	297.23	191.96	-297.40	10.00	10.00	0.00
7,600.00	73.89	180.05	7,357.50	204.06	191.88	-204.23	10.00	10.00	0.00
7,648.65	78.75	180.05	7,369.00	156.81	191.85	-156.98	10.00	10.00	0.00
Niobrara C									
7,700.00	83.89	180.05	7,376.75	106.06	191.80	-106.23	10.00	10.00	0.00
7,758.75	89.76	180.05	7,380.00	47.43	191.76	-47.60	10.00	10.00	0.00
Start 4554.67 hold at 7758.75 MD - 7"(621' FNL 1341' FEL)									

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Site:	HIGHWAY 160 2-2HZ PAD	North Reference:	True
Well:	HIGHWAY 160 37N-2HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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)
7,800.00	89.76	180.05	7,380.18	6.18	191.72	-6.35	0.00	0.00	0.00
7,900.00	89.76	180.05	7,380.59	-93.82	191.64	93.65	0.00	0.00	0.00
8,000.00	89.76	180.05	7,381.01	-193.82	191.56	193.65	0.00	0.00	0.00
8,100.00	89.76	180.05	7,381.43	-293.82	191.48	293.65	0.00	0.00	0.00
8,200.00	89.76	180.05	7,381.84	-393.82	191.40	393.65	0.00	0.00	0.00
8,300.00	89.76	180.05	7,382.26	-493.81	191.32	493.65	0.00	0.00	0.00
8,400.00	89.76	180.05	7,382.68	-593.81	191.24	593.65	0.00	0.00	0.00
8,500.00	89.76	180.05	7,383.09	-693.81	191.16	693.65	0.00	0.00	0.00
8,600.00	89.76	180.05	7,383.51	-793.81	191.07	793.64	0.00	0.00	0.00
8,700.00	89.76	180.05	7,383.93	-893.81	190.99	893.64	0.00	0.00	0.00
8,800.00	89.76	180.05	7,384.35	-993.81	190.91	993.64	0.00	0.00	0.00
8,900.00	89.76	180.05	7,384.76	-1,093.81	190.83	1,093.64	0.00	0.00	0.00
9,000.00	89.76	180.05	7,385.18	-1,193.81	190.75	1,193.64	0.00	0.00	0.00
9,100.00	89.76	180.05	7,385.60	-1,293.81	190.67	1,293.64	0.00	0.00	0.00
9,200.00	89.76	180.05	7,386.01	-1,393.81	190.59	1,393.64	0.00	0.00	0.00
9,300.00	89.76	180.05	7,386.43	-1,493.81	190.51	1,493.64	0.00	0.00	0.00
9,400.00	89.76	180.05	7,386.85	-1,593.80	190.43	1,593.64	0.00	0.00	0.00
9,500.00	89.76	180.05	7,387.27	-1,693.80	190.34	1,693.64	0.00	0.00	0.00
9,600.00	89.76	180.05	7,387.68	-1,793.80	190.26	1,793.64	0.00	0.00	0.00
9,700.00	89.76	180.05	7,388.10	-1,893.80	190.18	1,893.64	0.00	0.00	0.00
9,800.00	89.76	180.05	7,388.52	-1,993.80	190.10	1,993.63	0.00	0.00	0.00
9,900.00	89.76	180.05	7,388.93	-2,093.80	190.02	2,093.63	0.00	0.00	0.00
10,000.00	89.76	180.05	7,389.35	-2,193.80	189.94	2,193.63	0.00	0.00	0.00
10,100.00	89.76	180.05	7,389.77	-2,293.80	189.86	2,293.63	0.00	0.00	0.00
10,200.00	89.76	180.05	7,390.19	-2,393.80	189.78	2,393.63	0.00	0.00	0.00
10,300.00	89.76	180.05	7,390.60	-2,493.80	189.70	2,493.63	0.00	0.00	0.00
10,400.00	89.76	180.05	7,391.02	-2,593.80	189.61	2,593.63	0.00	0.00	0.00
10,500.00	89.76	180.05	7,391.44	-2,693.79	189.53	2,693.63	0.00	0.00	0.00
10,600.00	89.76	180.05	7,391.85	-2,793.79	189.45	2,793.63	0.00	0.00	0.00
10,700.00	89.76	180.05	7,392.27	-2,893.79	189.37	2,893.63	0.00	0.00	0.00
10,800.00	89.76	180.05	7,392.69	-2,993.79	189.29	2,993.63	0.00	0.00	0.00
10,900.00	89.76	180.05	7,393.10	-3,093.79	189.21	3,093.62	0.00	0.00	0.00
11,000.00	89.76	180.05	7,393.52	-3,193.79	189.13	3,193.62	0.00	0.00	0.00
11,100.00	89.76	180.05	7,393.94	-3,293.79	189.05	3,293.62	0.00	0.00	0.00
11,200.00	89.76	180.05	7,394.36	-3,393.79	188.97	3,393.62	0.00	0.00	0.00
11,300.00	89.76	180.05	7,394.77	-3,493.79	188.88	3,493.62	0.00	0.00	0.00
11,400.00	89.76	180.05	7,395.19	-3,593.79	188.80	3,593.62	0.00	0.00	0.00
11,500.00	89.76	180.05	7,395.61	-3,693.79	188.72	3,693.62	0.00	0.00	0.00
11,600.00	89.76	180.05	7,396.02	-3,793.78	188.64	3,793.62	0.00	0.00	0.00
11,700.00	89.76	180.05	7,396.44	-3,893.78	188.56	3,893.62	0.00	0.00	0.00
11,800.00	89.76	180.05	7,396.86	-3,993.78	188.48	3,993.62	0.00	0.00	0.00
11,900.00	89.76	180.05	7,397.28	-4,093.78	188.40	4,093.62	0.00	0.00	0.00
12,000.00	89.76	180.05	7,397.69	-4,193.78	188.32	4,193.62	0.00	0.00	0.00
12,100.00	89.76	180.05	7,398.11	-4,293.78	188.23	4,293.61	0.00	0.00	0.00
12,200.00	89.76	180.05	7,398.53	-4,393.78	188.15	4,393.61	0.00	0.00	0.00
12,300.00	89.76	180.05	7,398.94	-4,493.78	188.07	4,493.61	0.00	0.00	0.00
12,313.42	89.76	180.05	7,399.00	-4,507.20	188.06	4,507.03	0.00	0.00	0.00
TD at 12313.42 - PBHL_HIGHWAY 160 37N-2HZ(1' FSL 1340' FEL)									

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well HIGHWAY 160 37N-2HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5102' & KB 17' @ 5119.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5102' & KB 17' @ 5119.00ft (ASSUMED)
Site:	HIGHWAY 160 2-2HZ PAD	North Reference:	True
Well:	HIGHWAY 160 37N-2HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

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_HIGHWAY 160 3	0.00	0.00	7,399.00	-4,507.20	188.06	1,270,408.77	3,212,786.19	40.0731580	-104.7396410
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,219.00	1,219.00	9 5/8"	9.625	12.250	
7,758.75	7,380.00	7"(621' FNL 1341' FEL)	7.000	7.500	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,169.00	1,169.00	Fox Hills Base				
4,462.19	4,421.00	Parkman				
5,513.04	5,459.00	Sussex				
7,254.20	7,170.00	Sharon Springs				
7,302.45	7,206.00	Niobrara A				
7,428.26	7,286.00	Niobrara B				
7,648.65	7,369.00	Niobrara C				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,419.00	1,419.00	0.00	0.00	Start Build 2.00	
1,919.12	1,916.58	41.58	12.93	Start 3224.86 hold at 1919.12 MD	
5,143.97	5,092.42	576.42	179.29	Start Drop -2.00	
5,644.09	5,590.00	618.00	192.22	Start 1217.05 hold at 5644.09 MD	
6,861.14	6,807.05	618.00	192.22	Start DLS 10.00 TFO 180.05	
7,758.75	7,380.00	47.43	191.76	Start 4554.67 hold at 7758.75 MD	
12,313.42	7,399.00	-4,507.20	188.06	TD at 12313.42	