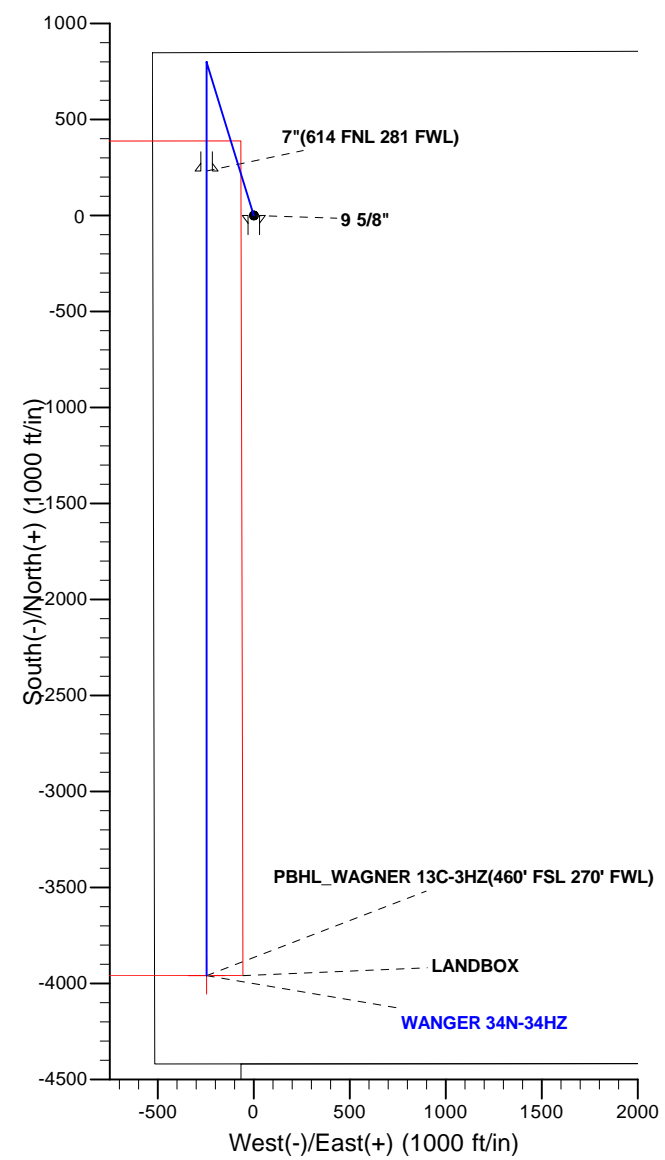
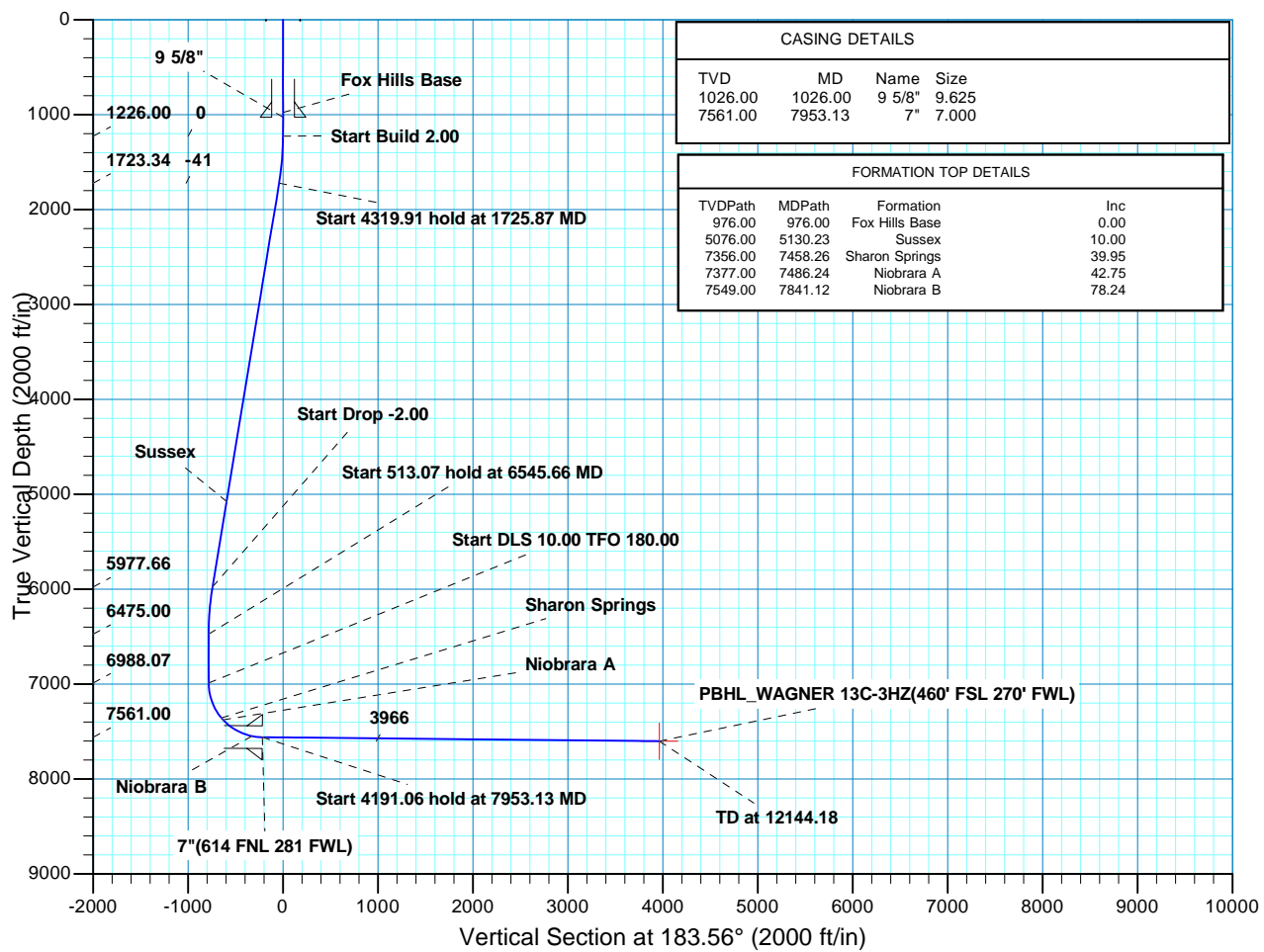


WELL DETAILS: WANGER 34N-34HZ										
GL 5059 & KB 17 @ 5076.00ft (ASSUMED)										
	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude				
	0.00	0.00	1247997.08	3172499.03	40.0124940	-104.8841520				
SECTION DETAILS										
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1226.00	0.00	0.00	1226.00	0.00	0.00	0.00	0.00	0.00		
1725.87	10.00	342.91	1723.34	41.58	-12.78	2.00	342.91	-40.71		
6045.79	10.00	342.91	5977.66	758.42	-233.19	0.00	0.00	-742.50		
6545.66	0.00	0.00	6475.00	800.00	-245.97	2.00	180.00	-783.20		
7058.73	0.00	0.00	6988.07	800.00	-245.97	0.00	0.00	-783.20		
7953.13	89.44	180.00	7561.00	232.65	-245.97	10.00	180.00	-216.94		
12144.18	89.44	180.00	7602.00	-3958.21	-245.97	0.00	0.003965.84		PBHL_WAGNER 13C-3HZ(460' FSL 270' FWL)	
DESIGN TARGET DETAILS										
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape		
PBHL	7602.00	-3958.21	-245.97	1244037.26	3172280.56	40.0016280	-104.8850300	Point		
- plan hits target center										





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WAGNER 34N-34HZ PAD

WANGER 34N-34HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

19 August, 2013

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WANGER 34N-34HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5059 & KB 17 @ 5076.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5059 & KB 17 @ 5076.00ft (ASSUMED)
Site:	WAGNER 34N-34HZ PAD	North Reference:	True
Well:	WANGER 34N-34HZ	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	WAGNER 34N-34HZ PAD, SECTION 34 T1N R67W				
Site Position:	Northing:	1,247,997.08 usft	Latitude:	40.0124940	
From:	Lat/Long	Easting:	3,172,499.03 usft	Longitude:	-104.8841520
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.40 °

Well	WANGER 34N-34HZ, 850' FNL 526' FWL					
Well Position	+N/-S	0.00 ft	Northing:	1,247,997.08 usft	Latitude:	40.0124940
	+E/-W	0.00 ft	Easting:	3,172,499.03 usft	Longitude:	-104.8841520
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,059.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	2013/08/16	8.64	66.63	52,613

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	183.56

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	
1,226.00	0.00	0.00	1,226.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,725.87	10.00	342.91	1,723.34	41.58	-12.78	2.00	2.00	0.00	342.91	
6,045.79	10.00	342.91	5,977.66	758.42	-233.19	0.00	0.00	0.00	0.00	
6,545.66	0.00	0.00	6,475.00	800.00	-245.97	2.00	-2.00	0.00	180.00	
7,058.73	0.00	0.00	6,988.07	800.00	-245.97	0.00	0.00	0.00	0.00	
7,953.13	89.44	180.00	7,561.00	232.65	-245.97	10.00	10.00	20.13	180.00	
12,144.18	89.44	180.00	7,602.00	-3,958.21	-245.97	0.00	0.00	0.00	0.00	PBHL_WAGNER 13C

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WANGER 34N-34HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5059 & KB 17 @ 5076.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5059 & KB 17 @ 5076.00ft (ASSUMED)
Site:	WAGNER 34N-34HZ PAD	North Reference:	True
Well:	WANGER 34N-34HZ	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	
976.00	0.00	0.00	976.00	0.00	0.00	0.00	0.00	0.00	0.00	
Fox Hills Base										
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,026.00	0.00	0.00	1,026.00	0.00	0.00	0.00	0.00	0.00	0.00	
9 5/8"										
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	
1,226.00	0.00	0.00	1,226.00	0.00	0.00	0.00	0.00	0.00	0.00	
Start Build 2.00										
1,300.00	1.48	342.91	1,299.99	0.91	-0.28	-0.89	2.00	2.00	0.00	
1,400.00	3.48	342.91	1,399.89	5.05	-1.55	-4.94	2.00	2.00	0.00	
1,500.00	5.48	342.91	1,499.58	12.52	-3.85	-12.25	2.00	2.00	0.00	
1,600.00	7.48	342.91	1,598.94	23.30	-7.16	-22.81	2.00	2.00	0.00	
1,700.00	9.48	342.91	1,697.84	37.40	-11.50	-36.61	2.00	2.00	0.00	
1,725.87	10.00	342.91	1,723.34	41.58	-12.78	-40.71	2.00	2.00	0.00	
Start 4319.91 hold at 1725.87 MD										
1,800.00	10.00	342.91	1,796.34	53.88	-16.57	-52.75	0.00	0.00	0.00	
1,900.00	10.00	342.91	1,894.82	70.47	-21.67	-68.99	0.00	0.00	0.00	
2,000.00	10.00	342.91	1,993.30	87.07	-26.77	-85.24	0.00	0.00	0.00	
2,100.00	10.00	342.91	2,091.79	103.66	-31.87	-101.49	0.00	0.00	0.00	
2,200.00	10.00	342.91	2,190.27	120.26	-36.97	-117.73	0.00	0.00	0.00	
2,300.00	10.00	342.91	2,288.75	136.85	-42.08	-133.98	0.00	0.00	0.00	
2,400.00	10.00	342.91	2,387.23	153.44	-47.18	-150.22	0.00	0.00	0.00	
2,500.00	10.00	342.91	2,485.71	170.04	-52.28	-166.47	0.00	0.00	0.00	
2,600.00	10.00	342.91	2,584.19	186.63	-57.38	-182.71	0.00	0.00	0.00	
2,700.00	10.00	342.91	2,682.68	203.22	-62.48	-198.96	0.00	0.00	0.00	
2,800.00	10.00	342.91	2,781.16	219.82	-67.59	-215.20	0.00	0.00	0.00	
2,900.00	10.00	342.91	2,879.64	236.41	-72.69	-231.45	0.00	0.00	0.00	
3,000.00	10.00	342.91	2,978.12	253.01	-77.79	-247.69	0.00	0.00	0.00	
3,100.00	10.00	342.91	3,076.60	269.60	-82.89	-263.94	0.00	0.00	0.00	
3,200.00	10.00	342.91	3,175.08	286.19	-87.99	-280.19	0.00	0.00	0.00	
3,300.00	10.00	342.91	3,273.56	302.79	-93.10	-296.43	0.00	0.00	0.00	
3,400.00	10.00	342.91	3,372.05	319.38	-98.20	-312.68	0.00	0.00	0.00	
3,500.00	10.00	342.91	3,470.53	335.98	-103.30	-328.92	0.00	0.00	0.00	
3,600.00	10.00	342.91	3,569.01	352.57	-108.40	-345.17	0.00	0.00	0.00	
3,700.00	10.00	342.91	3,667.49	369.16	-113.50	-361.41	0.00	0.00	0.00	
3,800.00	10.00	342.91	3,765.97	385.76	-118.61	-377.66	0.00	0.00	0.00	
3,900.00	10.00	342.91	3,864.45	402.35	-123.71	-393.90	0.00	0.00	0.00	
4,000.00	10.00	342.91	3,962.94	418.95	-128.81	-410.15	0.00	0.00	0.00	
4,100.00	10.00	342.91	4,061.42	435.54	-133.91	-426.39	0.00	0.00	0.00	
4,200.00	10.00	342.91	4,159.90	452.13	-139.01	-442.64	0.00	0.00	0.00	
4,300.00	10.00	342.91	4,258.38	468.73	-144.12	-458.89	0.00	0.00	0.00	
4,400.00	10.00	342.91	4,356.86	485.32	-149.22	-475.13	0.00	0.00	0.00	
4,500.00	10.00	342.91	4,455.34	501.91	-154.32	-491.38	0.00	0.00	0.00	

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WANGER 34N-34HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5059 & KB 17 @ 5076.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5059 & KB 17 @ 5076.00ft (ASSUMED)
Site:	WAGNER 34N-34HZ PAD	North Reference:	True
Well:	WANGER 34N-34HZ	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)
4,600.00	10.00	342.91	4,553.82	518.51	-159.42	-507.62	0.00	0.00	0.00
4,700.00	10.00	342.91	4,652.31	535.10	-164.52	-523.87	0.00	0.00	0.00
4,800.00	10.00	342.91	4,750.79	551.70	-169.63	-540.11	0.00	0.00	0.00
4,900.00	10.00	342.91	4,849.27	568.29	-174.73	-556.36	0.00	0.00	0.00
5,000.00	10.00	342.91	4,947.75	584.88	-179.83	-572.60	0.00	0.00	0.00
5,100.00	10.00	342.91	5,046.23	601.48	-184.93	-588.85	0.00	0.00	0.00
5,130.23	10.00	342.91	5,076.00	606.49	-186.47	-593.76	0.00	0.00	0.00
Sussex									
5,200.00	10.00	342.91	5,144.71	618.07	-190.03	-605.10	0.00	0.00	0.00
5,300.00	10.00	342.91	5,243.20	634.67	-195.14	-621.34	0.00	0.00	0.00
5,400.00	10.00	342.91	5,341.68	651.26	-200.24	-637.59	0.00	0.00	0.00
5,500.00	10.00	342.91	5,440.16	667.85	-205.34	-653.83	0.00	0.00	0.00
5,600.00	10.00	342.91	5,538.64	684.45	-210.44	-670.08	0.00	0.00	0.00
5,700.00	10.00	342.91	5,637.12	701.04	-215.54	-686.32	0.00	0.00	0.00
5,800.00	10.00	342.91	5,735.60	717.63	-220.65	-702.57	0.00	0.00	0.00
5,900.00	10.00	342.91	5,834.08	734.23	-225.75	-718.81	0.00	0.00	0.00
6,000.00	10.00	342.91	5,932.57	750.82	-230.85	-735.06	0.00	0.00	0.00
6,045.79	10.00	342.91	5,977.66	758.42	-233.19	-742.50	0.00	0.00	0.00
Start Drop -2.00									
6,100.00	8.91	342.91	6,031.13	766.93	-235.80	-750.83	2.00	-2.00	0.00
6,200.00	6.91	342.91	6,130.18	780.09	-239.85	-763.71	2.00	-2.00	0.00
6,300.00	4.91	342.91	6,229.64	789.94	-242.88	-773.35	2.00	-2.00	0.00
6,400.00	2.91	342.91	6,329.40	796.46	-244.88	-779.74	2.00	-2.00	0.00
6,500.00	0.91	342.91	6,429.34	799.65	-245.86	-782.86	2.00	-2.00	0.00
6,545.66	0.00	0.00	6,475.00	800.00	-245.97	-783.20	2.00	-2.00	0.00
Start 513.07 hold at 6545.66 MD									
6,600.00	0.00	0.00	6,529.34	800.00	-245.97	-783.20	0.00	0.00	0.00
6,700.00	0.00	0.00	6,629.34	800.00	-245.97	-783.20	0.00	0.00	0.00
6,800.00	0.00	0.00	6,729.34	800.00	-245.97	-783.20	0.00	0.00	0.00
6,900.00	0.00	0.00	6,829.34	800.00	-245.97	-783.20	0.00	0.00	0.00
7,000.00	0.00	0.00	6,929.34	800.00	-245.97	-783.20	0.00	0.00	0.00
7,058.73	0.00	0.00	6,988.07	800.00	-245.97	-783.20	0.00	0.00	0.00
Start DLS 10.00 TFO 180.00									
7,100.00	4.13	180.00	7,029.30	798.51	-245.97	-781.72	10.00	10.00	0.00
7,200.00	14.13	180.00	7,127.91	782.67	-245.97	-765.91	10.00	10.00	0.00
7,300.00	24.13	180.00	7,222.27	749.95	-245.97	-733.25	10.00	10.00	0.00
7,400.00	34.13	180.00	7,309.51	701.34	-245.97	-684.73	10.00	10.00	0.00
7,458.26	39.95	180.00	7,356.00	666.26	-245.97	-649.72	10.00	10.00	0.00
Sharon Springs									
7,486.24	42.75	180.00	7,377.00	647.77	-245.97	-631.27	10.00	10.00	0.00
Niobrara A									
7,500.00	44.13	180.00	7,386.99	638.31	-245.97	-621.83	10.00	10.00	0.00
7,600.00	54.13	180.00	7,452.35	562.79	-245.97	-546.45	10.00	10.00	0.00
7,700.00	64.13	180.00	7,503.60	477.07	-245.97	-460.90	10.00	10.00	0.00
7,800.00	74.13	180.00	7,539.18	383.75	-245.97	-367.76	10.00	10.00	0.00
7,841.13	78.24	180.00	7,549.00	343.82	-245.97	-327.91	10.00	10.00	0.00
Niobrara B									
7,900.00	84.13	180.00	7,558.02	285.67	-245.97	-269.87	10.00	10.00	0.00
7,953.13	89.44	180.00	7,561.00	232.64	-245.97	-216.94	10.00	10.00	0.00
Start 4191.06 hold at 7953.13 MD - 7"(614 FNL 281 FWL)									
8,000.00	89.44	180.00	7,561.46	185.78	-245.97	-170.16	0.00	0.00	0.00
8,100.00	89.44	180.00	7,562.44	85.78	-245.97	-70.36	0.00	0.00	0.00
8,200.00	89.44	180.00	7,563.42	-14.21	-245.97	29.44	0.00	0.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WANGER 34N-34HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5059 & KB 17 @ 5076.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5059 & KB 17 @ 5076.00ft (ASSUMED)
Site:	WAGNER 34N-34HZ PAD	North Reference:	True
Well:	WANGER 34N-34HZ	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)
8,300.00	89.44	180.00	7,564.39	-114.21	-245.97	129.25	0.00	0.00	0.00
8,400.00	89.44	180.00	7,565.37	-214.20	-245.97	229.05	0.00	0.00	0.00
8,500.00	89.44	180.00	7,566.35	-314.20	-245.97	328.85	0.00	0.00	0.00
8,600.00	89.44	180.00	7,567.33	-414.20	-245.97	428.65	0.00	0.00	0.00
8,700.00	89.44	180.00	7,568.31	-514.19	-245.97	528.46	0.00	0.00	0.00
8,800.00	89.44	180.00	7,569.29	-614.19	-245.97	628.26	0.00	0.00	0.00
8,900.00	89.44	180.00	7,570.26	-714.18	-245.97	728.06	0.00	0.00	0.00
9,000.00	89.44	180.00	7,571.24	-814.18	-245.97	827.86	0.00	0.00	0.00
9,100.00	89.44	180.00	7,572.22	-914.17	-245.97	927.67	0.00	0.00	0.00
9,200.00	89.44	180.00	7,573.20	-1,014.17	-245.97	1,027.47	0.00	0.00	0.00
9,300.00	89.44	180.00	7,574.18	-1,114.16	-245.97	1,127.27	0.00	0.00	0.00
9,400.00	89.44	180.00	7,575.15	-1,214.16	-245.97	1,227.08	0.00	0.00	0.00
9,500.00	89.44	180.00	7,576.13	-1,314.15	-245.97	1,326.88	0.00	0.00	0.00
9,600.00	89.44	180.00	7,577.11	-1,414.15	-245.97	1,426.68	0.00	0.00	0.00
9,700.00	89.44	180.00	7,578.09	-1,514.14	-245.97	1,526.48	0.00	0.00	0.00
9,800.00	89.44	180.00	7,579.07	-1,614.14	-245.97	1,626.29	0.00	0.00	0.00
9,900.00	89.44	180.00	7,580.05	-1,714.13	-245.97	1,726.09	0.00	0.00	0.00
10,000.00	89.44	180.00	7,581.02	-1,814.13	-245.97	1,825.89	0.00	0.00	0.00
10,100.00	89.44	180.00	7,582.00	-1,914.12	-245.97	1,925.69	0.00	0.00	0.00
10,200.00	89.44	180.00	7,582.98	-2,014.12	-245.97	2,025.50	0.00	0.00	0.00
10,300.00	89.44	180.00	7,583.96	-2,114.11	-245.97	2,125.30	0.00	0.00	0.00
10,400.00	89.44	180.00	7,584.94	-2,214.11	-245.97	2,225.10	0.00	0.00	0.00
10,500.00	89.44	180.00	7,585.92	-2,314.10	-245.97	2,324.90	0.00	0.00	0.00
10,600.00	89.44	180.00	7,586.89	-2,414.10	-245.97	2,424.71	0.00	0.00	0.00
10,700.00	89.44	180.00	7,587.87	-2,514.09	-245.97	2,524.51	0.00	0.00	0.00
10,800.00	89.44	180.00	7,588.85	-2,614.09	-245.97	2,624.31	0.00	0.00	0.00
10,900.00	89.44	180.00	7,589.83	-2,714.09	-245.97	2,724.12	0.00	0.00	0.00
11,000.00	89.44	180.00	7,590.81	-2,814.08	-245.97	2,823.92	0.00	0.00	0.00
11,100.00	89.44	180.00	7,591.79	-2,914.08	-245.97	2,923.72	0.00	0.00	0.00
11,200.00	89.44	180.00	7,592.76	-3,014.07	-245.97	3,023.52	0.00	0.00	0.00
11,300.00	89.44	180.00	7,593.74	-3,114.07	-245.97	3,123.33	0.00	0.00	0.00
11,400.00	89.44	180.00	7,594.72	-3,214.06	-245.97	3,223.13	0.00	0.00	0.00
11,500.00	89.44	180.00	7,595.70	-3,314.06	-245.97	3,322.93	0.00	0.00	0.00
11,600.00	89.44	180.00	7,596.68	-3,414.05	-245.97	3,422.73	0.00	0.00	0.00
11,700.00	89.44	180.00	7,597.65	-3,514.05	-245.97	3,522.54	0.00	0.00	0.00
11,800.00	89.44	180.00	7,598.63	-3,614.04	-245.97	3,622.34	0.00	0.00	0.00
11,900.00	89.44	180.00	7,599.61	-3,714.04	-245.97	3,722.14	0.00	0.00	0.00
12,000.00	89.44	180.00	7,600.59	-3,814.03	-245.97	3,821.95	0.00	0.00	0.00
12,100.00	89.44	180.00	7,601.57	-3,914.03	-245.97	3,921.75	0.00	0.00	0.00
12,144.18	89.44	180.00	7,602.00	-3,958.21	-245.97	3,965.84	0.00	0.00	0.00
TD at 12144.18 - PBHL_WAGNER 13C-3HZ(460' FSL 270' FWL)									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL_WAGNER 13C-3 - hit/miss target - Shape	0.00	0.00	7,602.00	-3,958.21	-245.97	1,244,037.26	3,172,280.56	40.0016280	-104.8850300
- plan hits target center									
- Point									

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WANGER 34N-34HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5059 & KB 17 @ 5076.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5059 & KB 17 @ 5076.00ft (ASSUMED)
Site:	WAGNER 34N-34HZ PAD	North Reference:	True
Well:	WANGER 34N-34HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,026.00	1,026.00	9 5/8"	9.625	12.250	
7,953.13	7,561.00	7"(614 FNL 281 FWL)	7.000	7.500	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
976.00	977.00	Fox Hills Base			
5,130.23	5,077.00	Sussex			
7,458.26	7,357.00	Sharon Springs			
7,486.24	7,378.00	Niobrara A			
7,841.13	7,550.00	Niobrara B			

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,226.00	1,226.00	0.00	0.00	Start Build 2.00	
1,725.87	1,723.34	41.58	-12.78	Start 4319.91 hold at 1725.87 MD	
6,045.79	5,977.66	758.42	-233.19	Start Drop -2.00	
6,545.66	6,475.00	800.00	-245.97	Start 513.07 hold at 6545.66 MD	
7,058.73	6,988.07	800.00	-245.97	Start DLS 10.00 TFO 180.00	
7,953.13	7,561.00	232.65	-245.97	Start 4191.06 hold at 7953.13 MD	
12,144.18	7,602.00	-3,958.21	-245.97	TD at 12144.18	