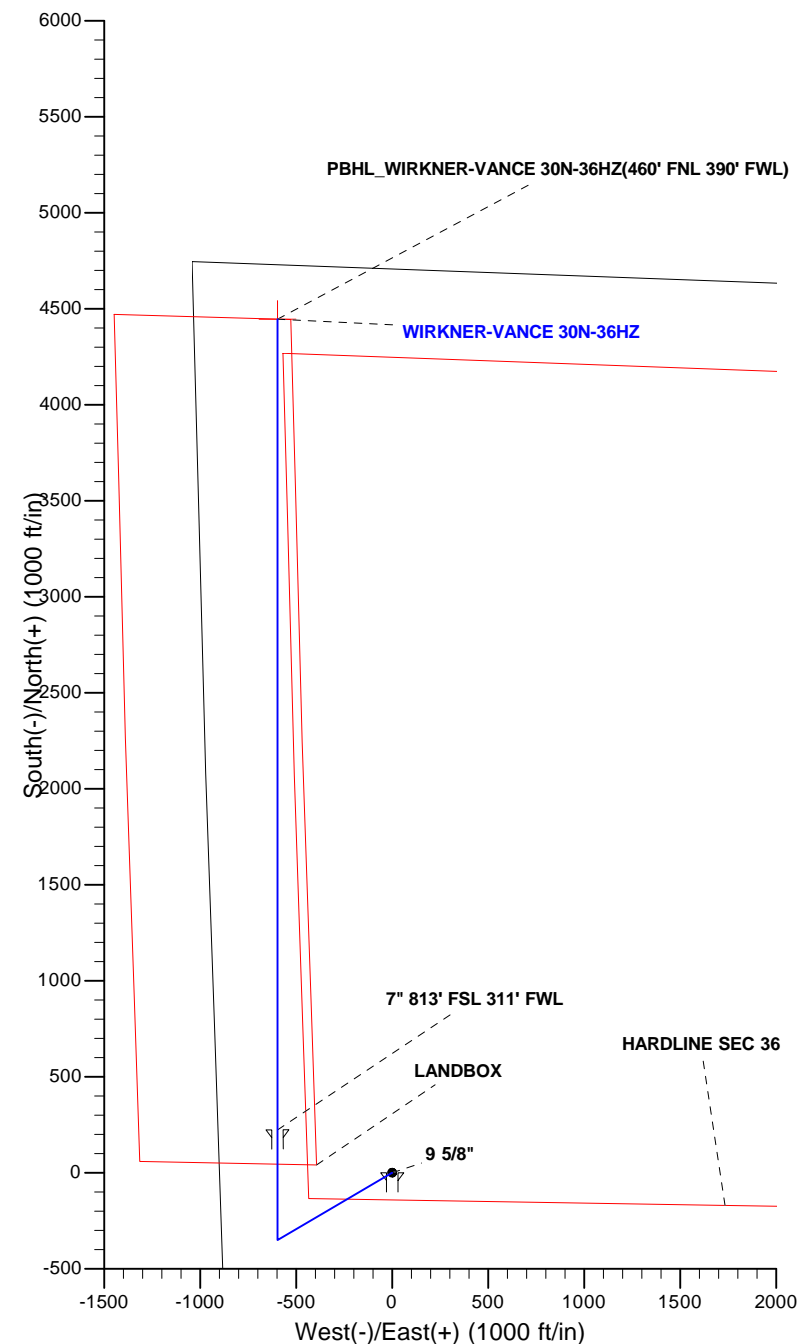
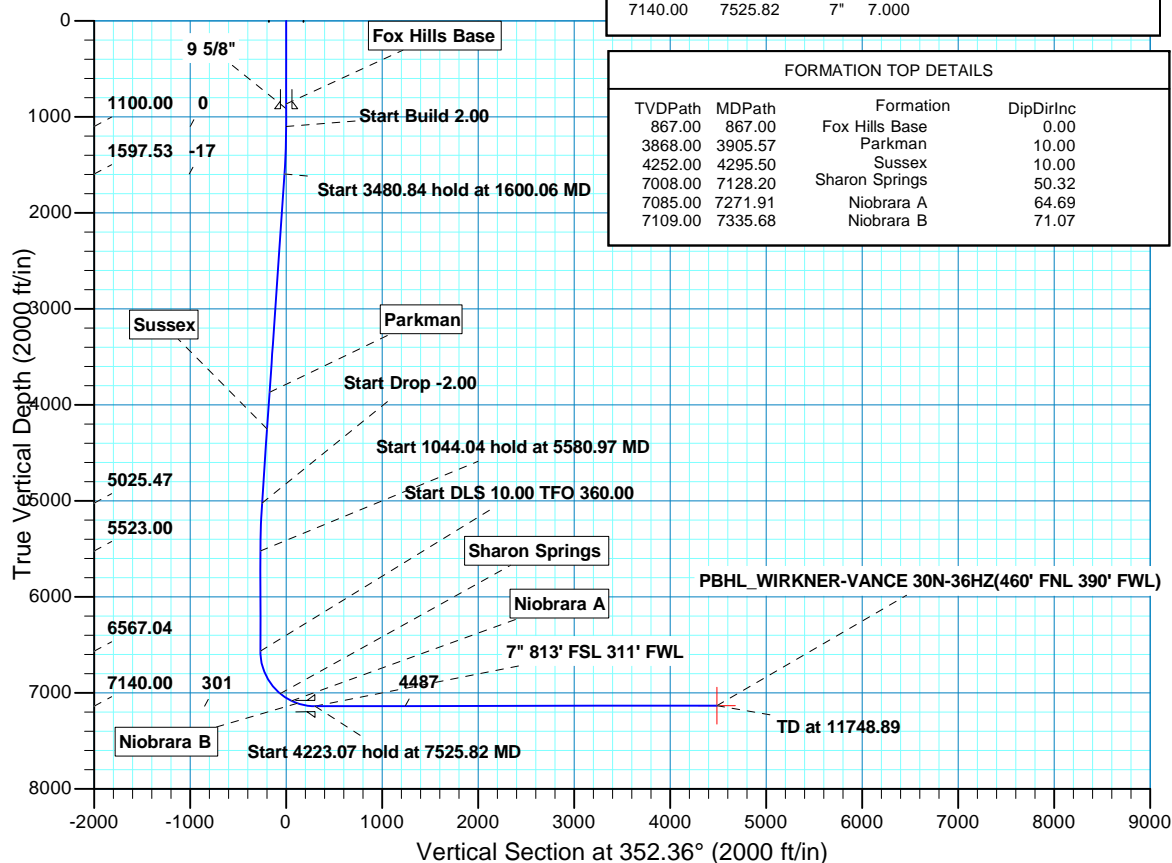


WELL DETAILS: WIRKNER-VANCE 30N-36HZ											
GL 4822 & KB 17 @ 4839.00ft (ASSUMED)											
+N/-S 0.00		+E/-W 0.00		Northing 1307399.78		Easting 3182955.85		Latitude 40.1753539		Longitude -104.8452550	
SECTION DETAILS											
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	0.00			
1600.06	10.00	239.60	1597.53	-22.03	-37.55	2.00	239.60	-16.84			
5080.90	10.00	239.60	5025.47	-327.97	-558.93	0.00	0.00	-250.75			
5580.97	0.00	0.00	5523.00	-350.00	-596.48	2.00	180.00	-267.59			
6625.01	0.00	0.00	6567.04	-350.00	-596.48	0.00	0.00	-267.59			
7525.82	90.08	360.00	7140.00	223.77	-596.48	10.00	360.00	301.08			
11748.89	90.08	360.00	7134.00	4446.83	-596.48	0.00	0.004486.66	PBHL_WIRKNER-VANCE 30N-36HZ(460' FNL 390' FWL)			
DESIGN TARGET DETAILS											
Name		TVD		+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
PBHL		7134.00		4446.83	-596.48	1311842.07	3182326.55	40.1875610	-104.8473900	Point	
- plan hits target center											

CASING DETAILS				
TVD	MD	Name	Size	
917.00	917.00	9 5/8"	9.625	
7140.00	7525.82	7"	7.000	

FORMATION TOP DETAILS				
TVDPath	MDPath	Formation	DipDirInc	
867.00	867.00	Fox Hills Base	0.00	
3868.00	3905.57	Parkman	10.00	
4252.00	4295.50	Sussex	10.00	
7008.00	7128.20	Sharon Springs	50.32	
7085.00	7271.91	Niobrara A	64.69	
7109.00	7335.68	Niobrara B	71.07	





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WIRKNER-VANCE 3C-36HZ PAD

WIRKNER-VANCE 30N-36HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

06 August, 2013

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 30N-36HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4822 & KB 17 @ 4839.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4822 & KB 17 @ 4839.00ft (ASSUMED)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 30N-36HZ	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	WIRKNER-VANCE 3C-36HZ PAD, SECTION 36 T3N R67W			
Site Position:		Northing:	1,307,250.94 usft	Latitude: 40.1749450
From:	Lat/Long	Easting:	3,182,974.56 usft	Longitude: -104.8451920
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: 0.42 °

Well	WIRKNER-VANCE 30N-36HZ, 425 FSL 851 FWL			
Well Position	+N/-S	148.97 ft	Northing:	1,307,399.77 usft
	+E/-W	-17.60 ft	Easting:	3,182,955.85 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:		Ground Level: 4,822.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	2013/06/18	8.65	66.78	52,727

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	352.36

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	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,600.06	10.00	239.60	1,597.53	-22.03	-37.55	2.00	2.00	0.00	239.60	
5,080.90	10.00	239.60	5,025.47	-327.97	-558.93	0.00	0.00	0.00	0.00	
5,580.97	0.00	0.00	5,523.00	-350.00	-596.48	2.00	-2.00	0.00	180.00	
6,625.01	0.00	0.00	6,567.04	-350.00	-596.48	0.00	0.00	0.00	0.00	
7,525.82	90.08	360.00	7,140.00	223.77	-596.48	10.00	10.00	0.00	360.00	
11,748.89	90.08	360.00	7,134.00	4,446.83	-596.48	0.00	0.00	0.00	0.00	PBHL_WIRKNER-VA

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 30N-36HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4822 & KB 17 @ 4839.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4822 & KB 17 @ 4839.00ft (ASSUMED)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 30N-36HZ	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
867.00	0.00	0.00	867.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Base									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
917.00	0.00	0.00	917.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
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
Start Build 2.00									
1,200.00	2.00	239.60	1,199.98	-0.88	-1.51	-0.68	2.00	2.00	0.00
1,300.00	4.00	239.60	1,299.84	-3.53	-6.02	-2.70	2.00	2.00	0.00
1,400.00	6.00	239.60	1,399.45	-7.94	-13.54	-6.07	2.00	2.00	0.00
1,500.00	8.00	239.60	1,498.70	-14.11	-24.05	-10.79	2.00	2.00	0.00
1,600.00	10.00	239.60	1,597.47	-22.03	-37.54	-16.84	2.00	2.00	0.00
1,600.06	10.00	239.60	1,597.53	-22.03	-37.55	-16.84	2.00	2.00	0.00
Start 3480.84 hold at 1600.06 MD									
1,700.00	10.00	239.60	1,695.95	-30.82	-52.52	-23.56	0.00	0.00	0.00
1,800.00	10.00	239.60	1,794.43	-39.60	-67.50	-30.28	0.00	0.00	0.00
1,900.00	10.00	239.60	1,892.91	-48.39	-82.47	-37.00	0.00	0.00	0.00
2,000.00	10.00	239.60	1,991.39	-57.18	-97.45	-43.72	0.00	0.00	0.00
2,100.00	10.00	239.60	2,089.87	-65.97	-112.43	-50.44	0.00	0.00	0.00
2,200.00	10.00	239.60	2,188.35	-74.76	-127.41	-57.16	0.00	0.00	0.00
2,300.00	10.00	239.60	2,286.83	-83.55	-142.39	-63.88	0.00	0.00	0.00
2,400.00	10.00	239.60	2,385.31	-92.34	-157.37	-70.60	0.00	0.00	0.00
2,500.00	10.00	239.60	2,483.79	-101.13	-172.35	-77.32	0.00	0.00	0.00
2,600.00	10.00	239.60	2,582.27	-109.92	-187.32	-84.04	0.00	0.00	0.00
2,700.00	10.00	239.60	2,680.75	-118.71	-202.30	-90.76	0.00	0.00	0.00
2,800.00	10.00	239.60	2,779.23	-127.50	-217.28	-97.48	0.00	0.00	0.00
2,900.00	10.00	239.60	2,877.71	-136.29	-232.26	-104.20	0.00	0.00	0.00
3,000.00	10.00	239.60	2,976.19	-145.07	-247.24	-110.92	0.00	0.00	0.00
3,100.00	10.00	239.60	3,074.67	-153.86	-262.22	-117.64	0.00	0.00	0.00
3,200.00	10.00	239.60	3,173.15	-162.65	-277.20	-124.36	0.00	0.00	0.00
3,300.00	10.00	239.60	3,271.63	-171.44	-292.18	-131.08	0.00	0.00	0.00
3,400.00	10.00	239.60	3,370.11	-180.23	-307.15	-137.80	0.00	0.00	0.00
3,500.00	10.00	239.60	3,468.59	-189.02	-322.13	-144.52	0.00	0.00	0.00
3,600.00	10.00	239.60	3,567.07	-197.81	-337.11	-151.24	0.00	0.00	0.00
3,700.00	10.00	239.60	3,665.55	-206.60	-352.09	-157.96	0.00	0.00	0.00
3,800.00	10.00	239.60	3,764.03	-215.39	-367.07	-164.68	0.00	0.00	0.00
3,900.00	10.00	239.60	3,862.51	-224.18	-382.05	-171.40	0.00	0.00	0.00
3,905.57	10.00	239.60	3,868.00	-224.67	-382.88	-171.77	0.00	0.00	0.00
Parkman									
4,000.00	10.00	239.60	3,960.99	-232.97	-397.03	-178.11	0.00	0.00	0.00
4,100.00	10.00	239.60	4,059.48	-241.76	-412.01	-184.83	0.00	0.00	0.00
4,200.00	10.00	239.60	4,157.96	-250.54	-426.98	-191.55	0.00	0.00	0.00
4,295.50	10.00	239.60	4,252.00	-258.94	-441.29	-197.97	0.00	0.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 30N-36HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4822 & KB 17 @ 4839.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4822 & KB 17 @ 4839.00ft (ASSUMED)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 30N-36HZ	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)
Sussex									
4,300.00	10.00	239.60	4,256.44	-259.33	-441.96	-198.27	0.00	0.00	0.00
4,400.00	10.00	239.60	4,354.92	-268.12	-456.94	-204.99	0.00	0.00	0.00
4,500.00	10.00	239.60	4,453.40	-276.91	-471.92	-211.71	0.00	0.00	0.00
4,600.00	10.00	239.60	4,551.88	-285.70	-486.90	-218.43	0.00	0.00	0.00
4,700.00	10.00	239.60	4,650.36	-294.49	-501.88	-225.15	0.00	0.00	0.00
4,800.00	10.00	239.60	4,748.84	-303.28	-516.86	-231.87	0.00	0.00	0.00
4,900.00	10.00	239.60	4,847.32	-312.07	-531.84	-238.59	0.00	0.00	0.00
5,000.00	10.00	239.60	4,945.80	-320.86	-546.81	-245.31	0.00	0.00	0.00
5,080.90	10.00	239.60	5,025.47	-327.97	-558.93	-250.75	0.00	0.00	0.00
Start Drop -2.00									
5,100.00	9.62	239.60	5,044.29	-329.62	-561.74	-252.01	2.00	-2.00	0.00
5,200.00	7.62	239.60	5,143.16	-337.20	-574.66	-257.81	2.00	-2.00	0.00
5,300.00	5.62	239.60	5,242.48	-343.03	-584.61	-262.27	2.00	-2.00	0.00
5,400.00	3.62	239.60	5,342.15	-347.11	-591.55	-265.38	2.00	-2.00	0.00
5,500.00	1.62	239.60	5,442.04	-349.42	-595.49	-267.15	2.00	-2.00	0.00
5,580.97	0.00	0.00	5,523.00	-350.00	-596.48	-267.59	2.00	-2.00	0.00
Start 1044.04 hold at 5580.97 MD									
5,600.00	0.00	0.00	5,542.03	-350.00	-596.48	-267.59	0.00	0.00	0.00
5,700.00	0.00	0.00	5,642.03	-350.00	-596.48	-267.59	0.00	0.00	0.00
5,800.00	0.00	0.00	5,742.03	-350.00	-596.48	-267.59	0.00	0.00	0.00
5,900.00	0.00	0.00	5,842.03	-350.00	-596.48	-267.59	0.00	0.00	0.00
6,000.00	0.00	0.00	5,942.03	-350.00	-596.48	-267.59	0.00	0.00	0.00
6,100.00	0.00	0.00	6,042.03	-350.00	-596.48	-267.59	0.00	0.00	0.00
6,200.00	0.00	0.00	6,142.03	-350.00	-596.48	-267.59	0.00	0.00	0.00
6,300.00	0.00	0.00	6,242.03	-350.00	-596.48	-267.59	0.00	0.00	0.00
6,400.00	0.00	0.00	6,342.03	-350.00	-596.48	-267.59	0.00	0.00	0.00
6,500.00	0.00	0.00	6,442.03	-350.00	-596.48	-267.59	0.00	0.00	0.00
6,600.00	0.00	0.00	6,542.03	-350.00	-596.48	-267.59	0.00	0.00	0.00
6,625.01	0.00	0.00	6,567.04	-350.00	-596.48	-267.59	0.00	0.00	0.00
Start DLS 10.00 TFO 360.00									
6,700.00	7.50	360.00	6,641.82	-345.10	-596.48	-262.74	10.00	10.00	0.00
6,800.00	17.50	360.00	6,739.33	-323.48	-596.48	-241.31	10.00	10.00	0.00
6,900.00	27.50	360.00	6,831.60	-285.26	-596.48	-203.43	10.00	10.00	0.00
7,000.00	37.50	360.00	6,915.83	-231.60	-596.48	-150.25	10.00	10.00	0.00
7,100.00	47.50	360.00	6,989.46	-164.13	-596.48	-83.37	10.00	10.00	0.00
7,128.20	50.32	360.00	7,008.00	-142.88	-596.48	-62.31	10.00	10.00	0.00
Sharon Springs									
7,200.00	57.50	360.00	7,050.26	-84.90	-596.48	-4.84	10.00	10.00	0.00
7,271.91	64.69	360.00	7,085.00	-21.99	-596.48	57.51	10.00	10.00	0.00
Niobrara A									
7,300.00	67.50	360.00	7,096.38	3.69	-596.48	82.96	10.00	10.00	0.00
7,335.68	71.07	360.00	7,109.00	37.05	-596.48	116.03	10.00	10.00	0.00
Niobrara B									
7,400.00	77.50	360.00	7,126.42	98.94	-596.48	177.36	10.00	10.00	0.00
7,500.00	87.50	360.00	7,139.45	197.96	-596.48	275.50	10.00	10.00	0.00
7,525.82	90.08	360.00	7,140.00	223.77	-596.48	301.08	10.00	10.00	0.00
Start 4223.07 hold at 7525.82 MD - 7" 813' FSL 311' FWL									
7,600.00	90.08	360.00	7,139.89	297.95	-596.48	374.61	0.00	0.00	0.00
7,700.00	90.08	360.00	7,139.75	397.95	-596.48	473.72	0.00	0.00	0.00
7,800.00	90.08	360.00	7,139.61	497.95	-596.48	572.83	0.00	0.00	0.00
7,900.00	90.08	360.00	7,139.47	597.95	-596.48	671.94	0.00	0.00	0.00
8,000.00	90.08	360.00	7,139.32	697.95	-596.48	771.06	0.00	0.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 30N-36HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4822 & KB 17 @ 4839.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4822 & KB 17 @ 4839.00ft (ASSUMED)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 30N-36HZ	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)	
8,100.00	90.08	360.00	7,139.18	797.95	-596.48	870.17	0.00	0.00	0.00	
8,200.00	90.08	360.00	7,139.04	897.95	-596.48	969.28	0.00	0.00	0.00	
8,300.00	90.08	360.00	7,138.90	997.95	-596.48	1,068.39	0.00	0.00	0.00	
8,400.00	90.08	360.00	7,138.76	1,097.95	-596.48	1,167.50	0.00	0.00	0.00	
8,500.00	90.08	360.00	7,138.61	1,197.95	-596.48	1,266.62	0.00	0.00	0.00	
8,600.00	90.08	360.00	7,138.47	1,297.95	-596.48	1,365.73	0.00	0.00	0.00	
8,700.00	90.08	360.00	7,138.33	1,397.95	-596.48	1,464.84	0.00	0.00	0.00	
8,800.00	90.08	360.00	7,138.19	1,497.95	-596.48	1,563.95	0.00	0.00	0.00	
8,900.00	90.08	360.00	7,138.05	1,597.95	-596.48	1,663.07	0.00	0.00	0.00	
9,000.00	90.08	360.00	7,137.90	1,697.95	-596.48	1,762.18	0.00	0.00	0.00	
9,100.00	90.08	360.00	7,137.76	1,797.95	-596.48	1,861.29	0.00	0.00	0.00	
9,200.00	90.08	360.00	7,137.62	1,897.95	-596.48	1,960.40	0.00	0.00	0.00	
9,300.00	90.08	360.00	7,137.48	1,997.95	-596.48	2,059.51	0.00	0.00	0.00	
9,400.00	90.08	360.00	7,137.34	2,097.95	-596.48	2,158.63	0.00	0.00	0.00	
9,500.00	90.08	360.00	7,137.19	2,197.95	-596.48	2,257.74	0.00	0.00	0.00	
9,600.00	90.08	360.00	7,137.05	2,297.95	-596.48	2,356.85	0.00	0.00	0.00	
9,700.00	90.08	360.00	7,136.91	2,397.95	-596.48	2,455.96	0.00	0.00	0.00	
9,800.00	90.08	360.00	7,136.77	2,497.95	-596.48	2,555.08	0.00	0.00	0.00	
9,900.00	90.08	360.00	7,136.63	2,597.95	-596.48	2,654.19	0.00	0.00	0.00	
10,000.00	90.08	360.00	7,136.48	2,697.95	-596.48	2,753.30	0.00	0.00	0.00	
10,100.00	90.08	360.00	7,136.34	2,797.95	-596.48	2,852.41	0.00	0.00	0.00	
10,200.00	90.08	360.00	7,136.20	2,897.95	-596.48	2,951.52	0.00	0.00	0.00	
10,300.00	90.08	360.00	7,136.06	2,997.95	-596.48	3,050.64	0.00	0.00	0.00	
10,400.00	90.08	360.00	7,135.92	3,097.95	-596.48	3,149.75	0.00	0.00	0.00	
10,500.00	90.08	360.00	7,135.77	3,197.95	-596.48	3,248.86	0.00	0.00	0.00	
10,600.00	90.08	360.00	7,135.63	3,297.95	-596.48	3,347.97	0.00	0.00	0.00	
10,700.00	90.08	360.00	7,135.49	3,397.95	-596.48	3,447.09	0.00	0.00	0.00	
10,800.00	90.08	360.00	7,135.35	3,497.95	-596.48	3,546.20	0.00	0.00	0.00	
10,900.00	90.08	360.00	7,135.21	3,597.95	-596.48	3,645.31	0.00	0.00	0.00	
11,000.00	90.08	360.00	7,135.06	3,697.95	-596.48	3,744.42	0.00	0.00	0.00	
11,100.00	90.08	360.00	7,134.92	3,797.95	-596.48	3,843.53	0.00	0.00	0.00	
11,200.00	90.08	360.00	7,134.78	3,897.95	-596.48	3,942.65	0.00	0.00	0.00	
11,300.00	90.08	360.00	7,134.64	3,997.95	-596.48	4,041.76	0.00	0.00	0.00	
11,400.00	90.08	360.00	7,134.50	4,097.95	-596.48	4,140.87	0.00	0.00	0.00	
11,500.00	90.08	360.00	7,134.35	4,197.95	-596.48	4,239.98	0.00	0.00	0.00	
11,600.00	90.08	360.00	7,134.21	4,297.95	-596.48	4,339.10	0.00	0.00	0.00	
11,700.00	90.08	360.00	7,134.07	4,397.95	-596.48	4,438.21	0.00	0.00	0.00	
11,748.89	90.08	360.00	7,134.00	4,446.83	-596.48	4,486.66	0.00	0.00	0.00	
TD at 11748.89 - PBHL_WIRKNER-VANCE 30N-36HZ(460' FNL 390' FWL)										

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_WIRKNER-VANC	0.00	0.00	7,134.00	4,446.83	-596.48	1,311,842.07	3,182,326.55	40.1875610	-104.8473900	
- plan hits target center										
- Point										

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 30N-36HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4822 & KB 17 @ 4839.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4822 & KB 17 @ 4839.00ft (ASSUMED)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 30N-36HZ	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)	
917.00	917.00	9 5/8"	9.625	12.250	
7,525.82	7,140.00	7" 813' FSL 311' FWL	7.000	7.500	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
867.00	867.00	Fox Hills Base			
3,905.57	3,868.00	Parkman			
4,295.50	4,252.00	Sussex			
7,128.20	7,008.00	Sharon Springs			
7,271.91	7,085.00	Niobrara A			
7,335.68	7,109.00	Niobrara B			

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,100.00	1,100.00	0.00	0.00	Start Build 2.00	
1,600.06	1,597.53	-22.03	-37.55	Start 3480.84 hold at 1600.06 MD	
5,080.90	5,025.47	-327.97	-558.93	Start Drop -2.00	
5,580.97	5,523.00	-350.00	-596.48	Start 1044.04 hold at 5580.97 MD	
6,625.01	6,567.04	-350.00	-596.48	Start DLS 10.00 TFO 360.00	
7,525.82	7,140.00	223.77	-596.48	Start 4223.07 hold at 7525.82 MD	
11,748.89	7,134.00	4,446.83	-596.48	TD at 11748.89	