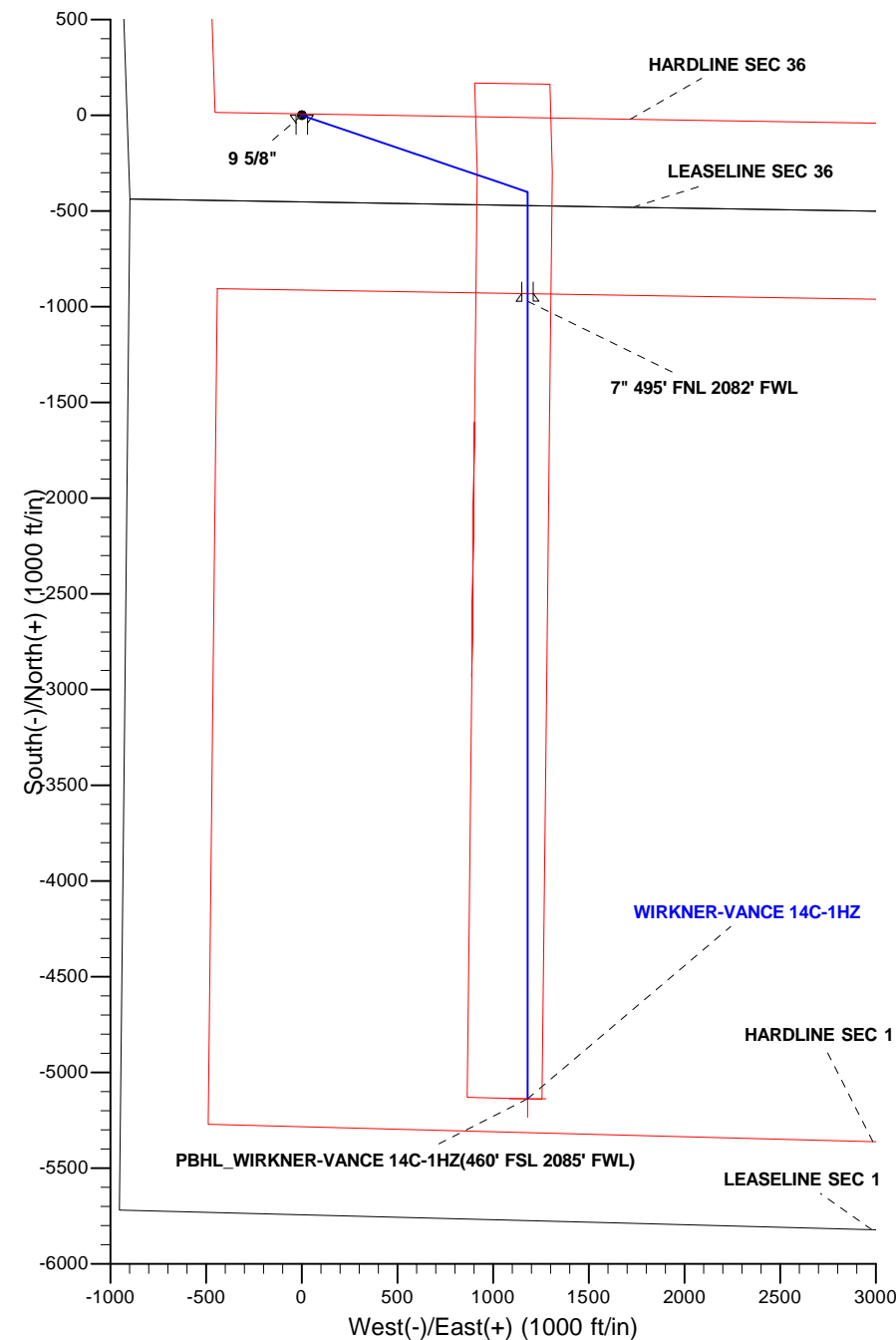
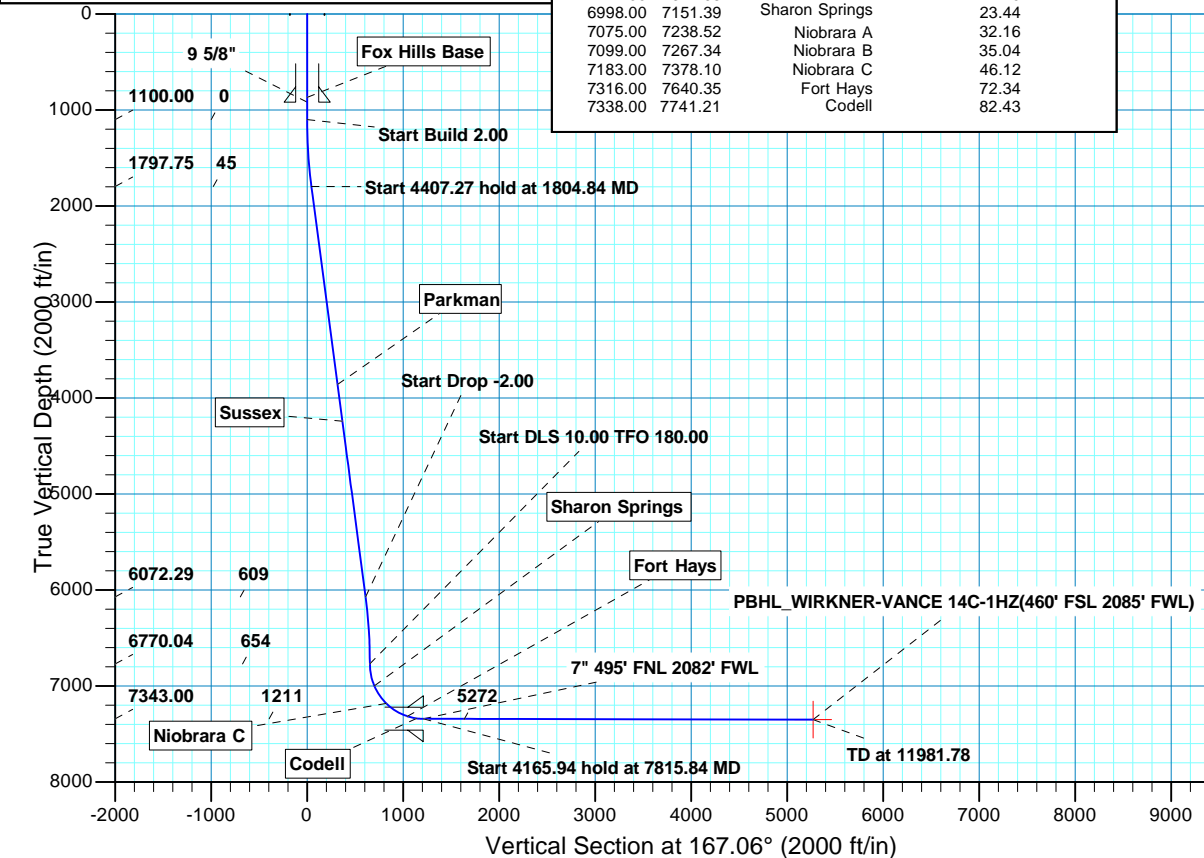


WELL DETAILS: WIRKNER-VANCE 14C-1HZ										
GL 4823 & KB 17 @ 4840.00ft (ASSUMED)										
+N/-S 0.00		+E/-W 0.00		Northing 1307250.93	Easting 3182974.55	Latitude 40.1749450		Longitude -104.8451920		
SECTION DETAILS										
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	
0.00	0.00	0.00	0.00	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		
1804.84	14.10	108.73	1797.75	-27.70	81.70	2.00	108.73	45.28		
6212.10	14.10	108.73	6072.29	-372.30	1098.32	0.00	0.00	608.71		
6916.94	0.00	0.00	6770.04	-400.00	1180.02	2.00	180.00	653.99		
7815.84	89.89	180.00	7343.00	-971.86	1180.02	10.00	180.00	1211.34		
11981.78	89.89	180.00	7351.00	-5137.79	1180.02	0.00	0.005271.56	PBHL_WIRKNER-VANCE 14C-1HZ(460' FSL 2085' FWL)		
DESIGN TARGET DETAILS										
Name PBHL		TVD 7351.00		+N/-S -5137.79	+E/-W 1180.02	Northing 1302122.00	Easting 3184192.48	Latitude 40.1608410	Longitude -104.8409700	Shape Point
- plan hits target center										
CASING DETAILS						FORMATION TOP DETAILS				
TVD	MD	Name	Size							
918.00	918.00	9 5/8"	9.625							
7343.00	7815.84	7"	7.000							
				TVDPath	MDPath	Formation		DipDirInc		
				868.00	868.00	Fox Hills Base		0.00		
				3858.00	3929.06	Parkman		14.10		
				4242.00	4324.98	Sussex		14.10		





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WIRKNER-VANCE 3C-36HZ PAD

WIRKNER-VANCE 14C-1HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

06 August, 2013

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 14C-1HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4823 & KB 17 @ 4840.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4823 & KB 17 @ 4840.00ft (ASSUMED)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 14C-1HZ	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 14C-1HZ, 277 FSL 864 FWL			
Well Position	+N/-S	-0.01 ft	Northing:	1,307,250.93 usft
	+E/-W	0.00 ft	Easting:	3,182,974.56 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Ground Level: 4,823.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	2013/06/18	8.64	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	167.06

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	
1,804.84	14.10	108.73	1,797.75	-27.70	81.70	2.00	2.00	0.00	108.73	
6,212.10	14.10	108.73	6,072.29	-372.30	1,098.32	0.00	0.00	0.00	0.00	
6,916.94	0.00	0.00	6,770.04	-400.00	1,180.02	2.00	-2.00	0.00	180.00	
7,815.84	89.89	180.00	7,343.00	-971.86	1,180.02	10.00	10.00	20.02	180.00	
11,981.78	89.89	180.00	7,351.00	-5,137.79	1,180.02	0.00	0.00	0.00	0.00	PBHL_WIRKNER-VA

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 14C-1HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4823 & KB 17 @ 4840.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4823 & KB 17 @ 4840.00ft (ASSUMED)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 14C-1HZ	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
868.00	0.00	0.00	868.00	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
918.00	0.00	0.00	918.00	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	108.73	1,199.98	-0.56	1.65	0.92	2.00	2.00	0.00
1,300.00	4.00	108.73	1,299.84	-2.24	6.61	3.66	2.00	2.00	0.00
1,400.00	6.00	108.73	1,399.45	-5.04	14.86	8.24	2.00	2.00	0.00
1,500.00	8.00	108.73	1,498.70	-8.95	26.40	14.63	2.00	2.00	0.00
1,600.00	10.00	108.73	1,597.47	-13.97	41.22	22.84	2.00	2.00	0.00
1,700.00	12.00	108.73	1,695.62	-20.10	59.29	32.86	2.00	2.00	0.00
1,800.00	14.00	108.73	1,793.06	-27.32	80.59	44.67	2.00	2.00	0.00
1,804.84	14.10	108.73	1,797.75	-27.70	81.70	45.28	2.00	2.00	0.00
Start 4407.27 hold at 1804.84 MD									
1,900.00	14.10	108.73	1,890.04	-35.14	103.66	57.45	0.00	0.00	0.00
2,000.00	14.10	108.73	1,987.03	-42.96	126.72	70.23	0.00	0.00	0.00
2,100.00	14.10	108.73	2,084.02	-50.77	149.79	83.02	0.00	0.00	0.00
2,200.00	14.10	108.73	2,181.01	-58.59	172.86	95.80	0.00	0.00	0.00
2,300.00	14.10	108.73	2,278.00	-66.41	195.92	108.58	0.00	0.00	0.00
2,400.00	14.10	108.73	2,374.99	-74.23	218.99	121.37	0.00	0.00	0.00
2,500.00	14.10	108.73	2,471.98	-82.05	242.06	134.15	0.00	0.00	0.00
2,600.00	14.10	108.73	2,568.97	-89.87	265.12	146.94	0.00	0.00	0.00
2,700.00	14.10	108.73	2,665.95	-97.69	288.19	159.72	0.00	0.00	0.00
2,800.00	14.10	108.73	2,762.94	-105.51	311.26	172.50	0.00	0.00	0.00
2,900.00	14.10	108.73	2,859.93	-113.33	334.32	185.29	0.00	0.00	0.00
3,000.00	14.10	108.73	2,956.92	-121.15	357.39	198.07	0.00	0.00	0.00
3,100.00	14.10	108.73	3,053.91	-128.97	380.46	210.86	0.00	0.00	0.00
3,200.00	14.10	108.73	3,150.90	-136.78	403.52	223.64	0.00	0.00	0.00
3,300.00	14.10	108.73	3,247.89	-144.60	426.59	236.43	0.00	0.00	0.00
3,400.00	14.10	108.73	3,344.87	-152.42	449.66	249.21	0.00	0.00	0.00
3,500.00	14.10	108.73	3,441.86	-160.24	472.72	261.99	0.00	0.00	0.00
3,600.00	14.10	108.73	3,538.85	-168.06	495.79	274.78	0.00	0.00	0.00
3,700.00	14.10	108.73	3,635.84	-175.88	518.86	287.56	0.00	0.00	0.00
3,800.00	14.10	108.73	3,732.83	-183.70	541.92	300.35	0.00	0.00	0.00
3,900.00	14.10	108.73	3,829.82	-191.52	564.99	313.13	0.00	0.00	0.00
3,929.06	14.10	108.73	3,858.00	-193.79	571.69	316.84	0.00	0.00	0.00
Parkman									
4,000.00	14.10	108.73	3,926.81	-199.34	588.06	325.91	0.00	0.00	0.00
4,100.00	14.10	108.73	4,023.79	-207.16	611.12	338.70	0.00	0.00	0.00
4,200.00	14.10	108.73	4,120.78	-214.98	634.19	351.48	0.00	0.00	0.00
4,300.00	14.10	108.73	4,217.77	-222.80	657.26	364.27	0.00	0.00	0.00
4,324.98	14.10	108.73	4,242.00	-224.75	663.02	367.46	0.00	0.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 14C-1HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4823 & KB 17 @ 4840.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4823 & KB 17 @ 4840.00ft (ASSUMED)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 14C-1HZ	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									
4,400.00	14.10	108.73	4,314.76	-230.61	680.32	377.05	0.00	0.00	0.00
4,500.00	14.10	108.73	4,411.75	-238.43	703.39	389.83	0.00	0.00	0.00
4,600.00	14.10	108.73	4,508.74	-246.25	726.46	402.62	0.00	0.00	0.00
4,700.00	14.10	108.73	4,605.73	-254.07	749.52	415.40	0.00	0.00	0.00
4,800.00	14.10	108.73	4,702.71	-261.89	772.59	428.19	0.00	0.00	0.00
4,900.00	14.10	108.73	4,799.70	-269.71	795.66	440.97	0.00	0.00	0.00
5,000.00	14.10	108.73	4,896.69	-277.53	818.72	453.75	0.00	0.00	0.00
5,100.00	14.10	108.73	4,993.68	-285.35	841.79	466.54	0.00	0.00	0.00
5,200.00	14.10	108.73	5,090.67	-293.17	864.86	479.32	0.00	0.00	0.00
5,300.00	14.10	108.73	5,187.66	-300.99	887.92	492.11	0.00	0.00	0.00
5,400.00	14.10	108.73	5,284.65	-308.81	910.99	504.89	0.00	0.00	0.00
5,500.00	14.10	108.73	5,381.63	-316.62	934.06	517.68	0.00	0.00	0.00
5,600.00	14.10	108.73	5,478.62	-324.44	957.12	530.46	0.00	0.00	0.00
5,700.00	14.10	108.73	5,575.61	-332.26	980.19	543.24	0.00	0.00	0.00
5,800.00	14.10	108.73	5,672.60	-340.08	1,003.26	556.03	0.00	0.00	0.00
5,900.00	14.10	108.73	5,769.59	-347.90	1,026.32	568.81	0.00	0.00	0.00
6,000.00	14.10	108.73	5,866.58	-355.72	1,049.39	581.60	0.00	0.00	0.00
6,100.00	14.10	108.73	5,963.57	-363.54	1,072.46	594.38	0.00	0.00	0.00
6,200.00	14.10	108.73	6,060.55	-371.36	1,095.52	607.16	0.00	0.00	0.00
6,212.10	14.10	108.73	6,072.29	-372.30	1,098.32	608.71	0.00	0.00	0.00
Start Drop -2.00									
6,300.00	12.34	108.73	6,157.86	-378.76	1,117.35	619.26	2.00	-2.00	0.00
6,400.00	10.34	108.73	6,255.90	-385.07	1,135.97	629.58	2.00	-2.00	0.00
6,500.00	8.34	108.73	6,354.57	-390.28	1,151.34	638.10	2.00	-2.00	0.00
6,600.00	6.34	108.73	6,453.75	-394.38	1,163.43	644.80	2.00	-2.00	0.00
6,700.00	4.34	108.73	6,553.31	-397.36	1,172.24	649.68	2.00	-2.00	0.00
6,800.00	2.34	108.73	6,653.13	-399.23	1,177.76	652.74	2.00	-2.00	0.00
6,900.00	0.34	108.73	6,753.10	-399.98	1,179.97	653.97	2.00	-2.00	0.00
6,916.94	0.00	0.00	6,770.04	-400.00	1,180.02	653.99	2.00	-2.00	0.00
Start DLS 10.00 TFO 180.00									
7,000.00	8.31	180.00	6,852.81	-406.01	1,180.02	659.85	10.00	10.00	0.00
7,100.00	18.31	180.00	6,950.00	-429.00	1,180.02	682.25	10.00	10.00	0.00
7,151.39	23.44	180.00	6,998.00	-447.30	1,180.02	700.09	10.00	10.00	0.00
Sharon Springs									
7,200.00	28.31	180.00	7,041.73	-468.51	1,180.02	720.76	10.00	10.00	0.00
7,238.52	32.16	180.00	7,075.00	-487.90	1,180.02	739.66	10.00	10.00	0.00
Niobrara A									
7,267.34	35.04	180.00	7,099.00	-503.85	1,180.02	755.20	10.00	10.00	0.00
Niobrara B									
7,300.00	38.31	180.00	7,125.19	-523.35	1,180.02	774.21	10.00	10.00	0.00
7,378.11	46.12	180.00	7,183.00	-575.79	1,180.02	825.32	10.00	10.00	0.00
Niobrara C									
7,400.00	48.31	180.00	7,197.87	-591.85	1,180.02	840.98	10.00	10.00	0.00
7,500.00	58.31	180.00	7,257.55	-671.94	1,180.02	919.03	10.00	10.00	0.00
7,600.00	68.31	180.00	7,302.42	-761.16	1,180.02	1,005.99	10.00	10.00	0.00
7,640.35	72.34	180.00	7,316.00	-799.15	1,180.02	1,043.02	10.00	10.00	0.00
Fort Hays									
7,700.00	78.31	180.00	7,331.11	-856.83	1,180.02	1,099.23	10.00	10.00	0.00
7,741.21	82.43	180.00	7,338.00	-897.45	1,180.02	1,138.82	10.00	10.00	0.00
Codell									
7,800.00	88.31	180.00	7,342.75	-956.02	1,180.02	1,195.90	10.00	10.00	0.00
7,815.84	89.89	180.00	7,343.00	-971.86	1,180.02	1,211.34	10.00	10.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 14C-1HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4823 & KB 17 @ 4840.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4823 & KB 17 @ 4840.00ft (ASSUMED)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 14C-1HZ	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)	
Start 4165.94 hold at 7815.84 MD - 7" 495' FNL 2082' FWL										
7,900.00	89.89	180.00	7,343.16	-1,056.02	1,180.02	1,293.36	0.00	0.00	0.00	
8,000.00	89.89	180.00	7,343.35	-1,156.02	1,180.02	1,390.83	0.00	0.00	0.00	
8,100.00	89.89	180.00	7,343.54	-1,256.02	1,180.02	1,488.29	0.00	0.00	0.00	
8,200.00	89.89	180.00	7,343.73	-1,356.02	1,180.02	1,585.75	0.00	0.00	0.00	
8,300.00	89.89	180.00	7,343.93	-1,456.02	1,180.02	1,683.21	0.00	0.00	0.00	
8,400.00	89.89	180.00	7,344.12	-1,556.02	1,180.02	1,780.68	0.00	0.00	0.00	
8,500.00	89.89	180.00	7,344.31	-1,656.02	1,180.02	1,878.14	0.00	0.00	0.00	
8,600.00	89.89	180.00	7,344.50	-1,756.02	1,180.02	1,975.60	0.00	0.00	0.00	
8,700.00	89.89	180.00	7,344.70	-1,856.02	1,180.02	2,073.06	0.00	0.00	0.00	
8,800.00	89.89	180.00	7,344.89	-1,956.02	1,180.02	2,170.52	0.00	0.00	0.00	
8,900.00	89.89	180.00	7,345.08	-2,056.02	1,180.02	2,267.99	0.00	0.00	0.00	
9,000.00	89.89	180.00	7,345.27	-2,156.02	1,180.02	2,365.45	0.00	0.00	0.00	
9,100.00	89.89	180.00	7,345.46	-2,256.02	1,180.02	2,462.91	0.00	0.00	0.00	
9,200.00	89.89	180.00	7,345.66	-2,356.02	1,180.02	2,560.37	0.00	0.00	0.00	
9,300.00	89.89	180.00	7,345.85	-2,456.02	1,180.02	2,657.84	0.00	0.00	0.00	
9,400.00	89.89	180.00	7,346.04	-2,556.02	1,180.02	2,755.30	0.00	0.00	0.00	
9,500.00	89.89	180.00	7,346.23	-2,656.02	1,180.02	2,852.76	0.00	0.00	0.00	
9,600.00	89.89	180.00	7,346.42	-2,756.01	1,180.02	2,950.22	0.00	0.00	0.00	
9,700.00	89.89	180.00	7,346.62	-2,856.01	1,180.02	3,047.69	0.00	0.00	0.00	
9,800.00	89.89	180.00	7,346.81	-2,956.01	1,180.02	3,145.15	0.00	0.00	0.00	
9,900.00	89.89	180.00	7,347.00	-3,056.01	1,180.02	3,242.61	0.00	0.00	0.00	
10,000.00	89.89	180.00	7,347.19	-3,156.01	1,180.02	3,340.07	0.00	0.00	0.00	
10,100.00	89.89	180.00	7,347.39	-3,256.01	1,180.02	3,437.53	0.00	0.00	0.00	
10,200.00	89.89	180.00	7,347.58	-3,356.01	1,180.02	3,535.00	0.00	0.00	0.00	
10,300.00	89.89	180.00	7,347.77	-3,456.01	1,180.02	3,632.46	0.00	0.00	0.00	
10,400.00	89.89	180.00	7,347.96	-3,556.01	1,180.02	3,729.92	0.00	0.00	0.00	
10,500.00	89.89	180.00	7,348.15	-3,656.01	1,180.02	3,827.38	0.00	0.00	0.00	
10,600.00	89.89	180.00	7,348.35	-3,756.01	1,180.02	3,924.85	0.00	0.00	0.00	
10,700.00	89.89	180.00	7,348.54	-3,856.01	1,180.02	4,022.31	0.00	0.00	0.00	
10,800.00	89.89	180.00	7,348.73	-3,956.01	1,180.02	4,119.77	0.00	0.00	0.00	
10,900.00	89.89	180.00	7,348.92	-4,056.01	1,180.02	4,217.23	0.00	0.00	0.00	
11,000.00	89.89	180.00	7,349.11	-4,156.01	1,180.02	4,314.69	0.00	0.00	0.00	
11,100.00	89.89	180.00	7,349.31	-4,256.01	1,180.02	4,412.16	0.00	0.00	0.00	
11,200.00	89.89	180.00	7,349.50	-4,356.01	1,180.02	4,509.62	0.00	0.00	0.00	
11,300.00	89.89	180.00	7,349.69	-4,456.01	1,180.02	4,607.08	0.00	0.00	0.00	
11,400.00	89.89	180.00	7,349.88	-4,556.01	1,180.02	4,704.54	0.00	0.00	0.00	
11,500.00	89.89	180.00	7,350.07	-4,656.01	1,180.02	4,802.01	0.00	0.00	0.00	
11,600.00	89.89	180.00	7,350.27	-4,756.01	1,180.02	4,899.47	0.00	0.00	0.00	
11,700.00	89.89	180.00	7,350.46	-4,856.01	1,180.02	4,996.93	0.00	0.00	0.00	
11,800.00	89.89	180.00	7,350.65	-4,956.01	1,180.02	5,094.39	0.00	0.00	0.00	
11,900.00	89.89	180.00	7,350.84	-5,056.01	1,180.02	5,191.86	0.00	0.00	0.00	
11,981.78	89.89	180.00	7,351.00	-5,137.79	1,180.02	5,271.56	0.00	0.00	0.00	
TD at 11981.78 - PBHL_WIRKNER-VANCE 14C-1HZ(460' FSL 2085' FWL)										

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 14C-1HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4823 & KB 17 @ 4840.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4823 & KB 17 @ 4840.00ft (ASSUMED)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 14C-1HZ	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_WIRKNER-VANC	0.00	0.00	7,351.00	-5,137.79	1,180.02	1,302,122.00	3,184,192.48	40.1608410	-104.8409700
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
918.00	918.00	9 5/8"	9.625	12.250	
7,815.84	7,343.00	7" 495' FNL 2082' FWL	7.000	7.500	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
868.00	867.00	Fox Hills Base				
3,929.06	3,857.00	Parkman				
4,324.98	4,241.00	Sussex				
7,151.39	6,997.00	Sharon Springs				
7,238.52	7,074.00	Niobrara A				
7,267.34	7,098.00	Niobrara B				
7,378.11	7,182.00	Niobrara C				
7,640.35	7,315.00	Fort Hays				
7,741.21	7,337.00	Codell				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,100.00	1,100.00	0.00	0.00	Start Build 2.00
1,804.84	1,797.75	-27.70	81.70	Start 4407.27 hold at 1804.84 MD
6,212.10	6,072.29	-372.30	1,098.32	Start Drop -2.00
6,916.94	6,770.04	-400.00	1,180.02	Start DLS 10.00 TFO 180.00
7,815.84	7,343.00	-971.86	1,180.02	Start 4165.94 hold at 7815.84 MD
11,981.78	7,351.00	-5,137.79	1,180.02	TD at 11981.78