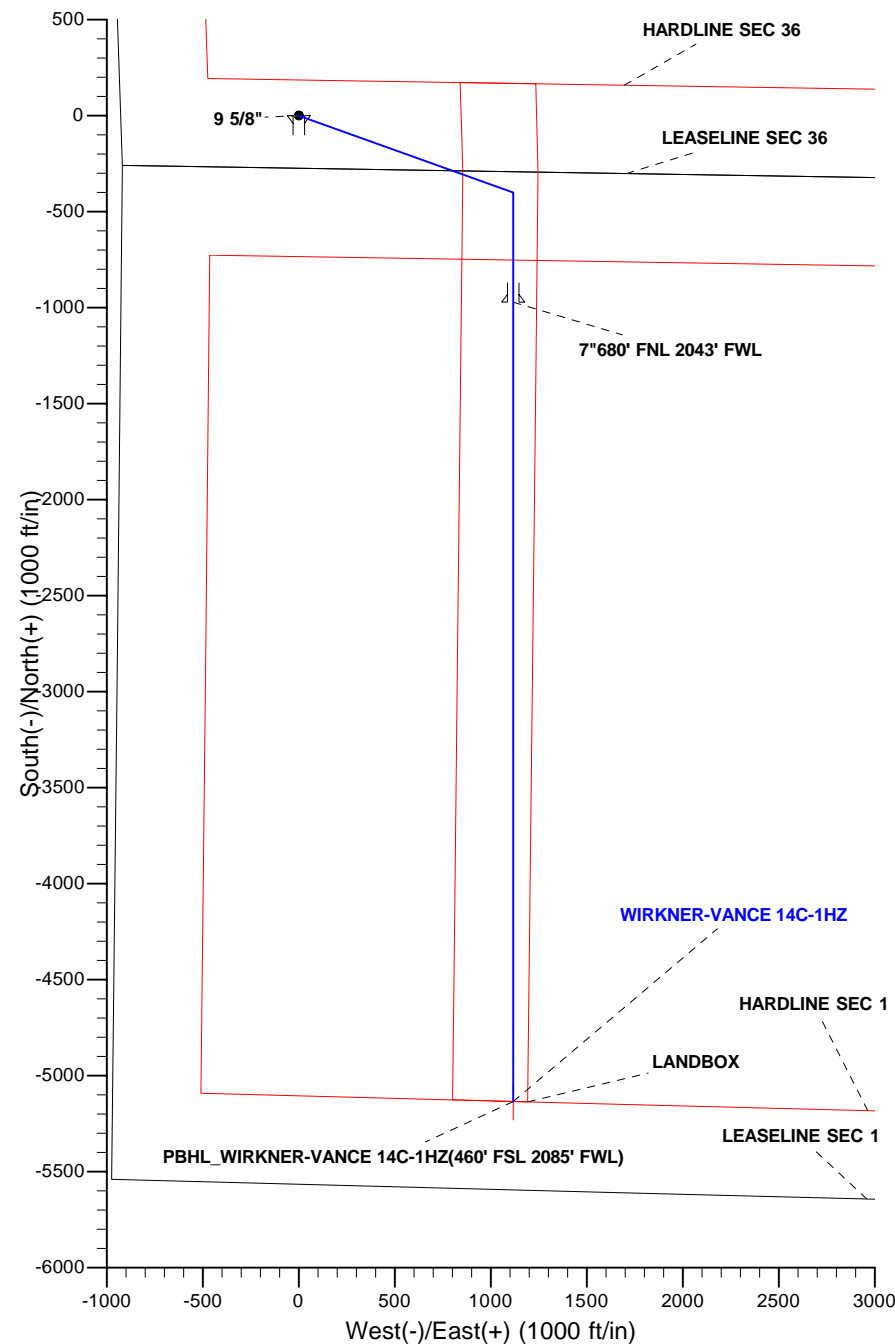
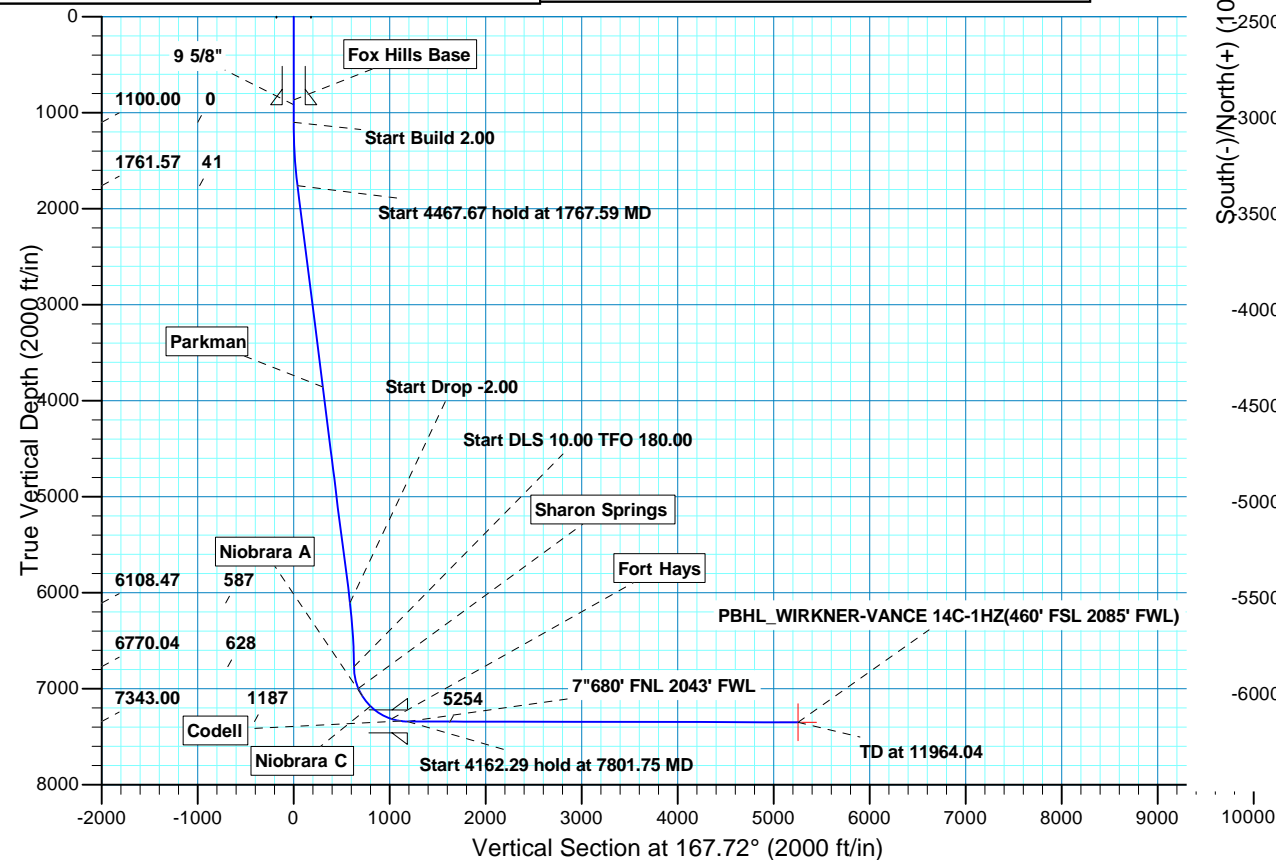


WELL DETAILS: WIRKNER-VANCE 14C-1HZ									
GL 4823 & KB 17 @ 4840.00ft (ASSUMED)									
+N/-S 0.00		+E/-W 0.00		Northing 1307247.74		Easting 3183037.45		Latitude 40.1749349 Longitude -104.8449670	
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	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	
1767.59	13.35	109.70	1761.57	-26.10	72.90	2.00	109.70	41.01	
6235.26	13.35	109.70	6108.47	-373.90	1044.23	0.00	0.00	587.37	
6902.85	0.00	0.00	6770.04	-400.00	1117.14	2.00	180.00	628.37	
7801.75	89.89	180.00	7343.00	-971.86	1117.14	10.00	180.00	1187.15	
11964.04	89.89	180.00	7351.00	-5134.14	1117.14	0.00	0.005254.27	PBHL_WIRKNER-VANCE 14C-1HZ(460' FSL 2085' FWL)	
FORMATION TOP DETAILS							CASING DETAILS		
TVDPath	MDPath	Formation		DipDirInc		TVD	MD	Name	Size
868.00	868.00	Fox Hills Base		0.00		918.00	918.00	9 5/8"	9.625
3858.00	3922.27	Parkman		13.35		7343.00	7801.75	7"	7.000
4242.00	4316.93	Sussex		13.35					
6998.00	7137.30	Sharon Springs		23.44					
7075.00	7224.43	Niobrara A		32.16					
7099.00	7253.25	Niobrara B		35.04					
7183.00	7364.02	Niobrara C		46.12					
7316.00	7626.26	Fort Hays		72.34					
7338.00	7727.12	Codell		82.43					





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

20 June, 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:	1,307,426.46 usft	Latitude: 40.1754260
From:	Lat/Long	Easting:	3,183,014.90 usft	Longitude: -104.8450430
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: 0.42 °

Well	WIRKNER-VANCE 14C-1HZ, 274 FSL 927 FWL			
Well Position	+N/-S	-178.89 ft	Northing:	1,307,247.74 usft
	+E/-W	21.24 ft	Easting:	3,183,037.45 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Latitude: 40.1749350
				Longitude: -104.8449670
				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	167.72

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	
1,767.59	13.35	109.70	1,761.57	-26.10	72.90	2.00	2.00	0.00	109.70	
6,235.26	13.35	109.70	6,108.47	-373.90	1,044.23	0.00	0.00	0.00	0.00	
6,902.85	0.00	0.00	6,770.04	-400.00	1,117.14	2.00	-2.00	0.00	180.00	
7,801.75	89.89	180.00	7,343.00	-971.86	1,117.14	10.00	10.00	-20.02	180.00	
11,964.04	89.89	180.00	7,351.00	-5,134.14	1,117.14	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	109.70	1,199.98	-0.59	1.64	0.92	2.00	2.00	0.00
1,300.00	4.00	109.70	1,299.84	-2.35	6.57	3.70	2.00	2.00	0.00
1,400.00	6.00	109.70	1,399.45	-5.29	14.78	8.31	2.00	2.00	0.00
1,500.00	8.00	109.70	1,498.70	-9.40	26.25	14.76	2.00	2.00	0.00
1,600.00	10.00	109.70	1,597.47	-14.67	40.98	23.05	2.00	2.00	0.00
1,700.00	12.00	109.70	1,695.62	-21.10	58.94	33.15	2.00	2.00	0.00
1,767.59	13.35	109.70	1,761.57	-26.10	72.90	41.01	2.00	2.00	0.00
Start 4467.67 hold at 1767.59 MD									
1,800.00	13.35	109.70	1,793.10	-28.63	79.95	44.97	0.00	0.00	0.00
1,900.00	13.35	109.70	1,890.40	-36.41	101.69	57.20	0.00	0.00	0.00
2,000.00	13.35	109.70	1,987.69	-44.20	123.43	69.43	0.00	0.00	0.00
2,100.00	13.35	109.70	2,084.99	-51.98	145.17	81.66	0.00	0.00	0.00
2,200.00	13.35	109.70	2,182.29	-59.76	166.91	93.89	0.00	0.00	0.00
2,300.00	13.35	109.70	2,279.58	-67.55	188.65	106.12	0.00	0.00	0.00
2,400.00	13.35	109.70	2,376.88	-75.33	210.40	118.34	0.00	0.00	0.00
2,500.00	13.35	109.70	2,474.18	-83.12	232.14	130.57	0.00	0.00	0.00
2,600.00	13.35	109.70	2,571.47	-90.90	253.88	142.80	0.00	0.00	0.00
2,700.00	13.35	109.70	2,668.77	-98.69	275.62	155.03	0.00	0.00	0.00
2,800.00	13.35	109.70	2,766.07	-106.47	297.36	167.26	0.00	0.00	0.00
2,900.00	13.35	109.70	2,863.37	-114.26	319.10	179.49	0.00	0.00	0.00
3,000.00	13.35	109.70	2,960.66	-122.04	340.84	191.72	0.00	0.00	0.00
3,100.00	13.35	109.70	3,057.96	-129.83	362.59	203.95	0.00	0.00	0.00
3,200.00	13.35	109.70	3,155.26	-137.61	384.33	216.18	0.00	0.00	0.00
3,300.00	13.35	109.70	3,252.55	-145.40	406.07	228.41	0.00	0.00	0.00
3,400.00	13.35	109.70	3,349.85	-153.18	427.81	240.64	0.00	0.00	0.00
3,500.00	13.35	109.70	3,447.15	-160.97	449.55	252.87	0.00	0.00	0.00
3,600.00	13.35	109.70	3,544.44	-168.75	471.29	265.10	0.00	0.00	0.00
3,700.00	13.35	109.70	3,641.74	-176.53	493.03	277.32	0.00	0.00	0.00
3,800.00	13.35	109.70	3,739.04	-184.32	514.77	289.55	0.00	0.00	0.00
3,900.00	13.35	109.70	3,836.34	-192.10	536.52	301.78	0.00	0.00	0.00
3,922.27	13.35	109.70	3,858.00	-193.84	541.36	304.51	0.00	0.00	0.00
Parkman									
4,000.00	13.35	109.70	3,933.63	-199.89	558.26	314.01	0.00	0.00	0.00
4,100.00	13.35	109.70	4,030.93	-207.67	580.00	326.24	0.00	0.00	0.00
4,200.00	13.35	109.70	4,128.23	-215.46	601.74	338.47	0.00	0.00	0.00
4,300.00	13.35	109.70	4,225.52	-223.24	623.48	350.70	0.00	0.00	0.00
4,316.93	13.35	109.70	4,242.00	-224.56	627.16	352.77	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	13.35	109.70	4,322.82	-231.03	645.22	362.93	0.00	0.00	0.00
4,500.00	13.35	109.70	4,420.12	-238.81	666.96	375.16	0.00	0.00	0.00
4,600.00	13.35	109.70	4,517.42	-246.60	688.71	387.39	0.00	0.00	0.00
4,700.00	13.35	109.70	4,614.71	-254.38	710.45	399.62	0.00	0.00	0.00
4,800.00	13.35	109.70	4,712.01	-262.17	732.19	411.85	0.00	0.00	0.00
4,900.00	13.35	109.70	4,809.31	-269.95	753.93	424.08	0.00	0.00	0.00
5,000.00	13.35	109.70	4,906.60	-277.74	775.67	436.30	0.00	0.00	0.00
5,100.00	13.35	109.70	5,003.90	-285.52	797.41	448.53	0.00	0.00	0.00
5,200.00	13.35	109.70	5,101.20	-293.31	819.15	460.76	0.00	0.00	0.00
5,300.00	13.35	109.70	5,198.49	-301.09	840.90	472.99	0.00	0.00	0.00
5,400.00	13.35	109.70	5,295.79	-308.87	862.64	485.22	0.00	0.00	0.00
5,500.00	13.35	109.70	5,393.09	-316.66	884.38	497.45	0.00	0.00	0.00
5,600.00	13.35	109.70	5,490.39	-324.44	906.12	509.68	0.00	0.00	0.00
5,700.00	13.35	109.70	5,587.68	-332.23	927.86	521.91	0.00	0.00	0.00
5,800.00	13.35	109.70	5,684.98	-340.01	949.60	534.14	0.00	0.00	0.00
5,900.00	13.35	109.70	5,782.28	-347.80	971.34	546.37	0.00	0.00	0.00
6,000.00	13.35	109.70	5,879.57	-355.58	993.08	558.60	0.00	0.00	0.00
6,100.00	13.35	109.70	5,976.87	-363.37	1,014.83	570.83	0.00	0.00	0.00
6,200.00	13.35	109.70	6,074.17	-371.15	1,036.57	583.06	0.00	0.00	0.00
6,235.26	13.35	109.70	6,108.47	-373.90	1,044.23	587.37	0.00	0.00	0.00
Start Drop -2.00									
6,300.00	12.06	109.70	6,171.63	-378.70	1,057.64	594.91	2.00	-2.00	0.00
6,400.00	10.06	109.70	6,269.77	-385.16	1,075.69	605.06	2.00	-2.00	0.00
6,500.00	8.06	109.70	6,368.52	-390.47	1,090.51	613.40	2.00	-2.00	0.00
6,600.00	6.06	109.70	6,467.75	-394.61	1,102.08	619.90	2.00	-2.00	0.00
6,700.00	4.06	109.70	6,567.36	-397.58	1,110.38	624.57	2.00	-2.00	0.00
6,800.00	2.06	109.70	6,667.21	-399.38	1,115.40	627.40	2.00	-2.00	0.00
6,900.00	0.06	109.70	6,767.19	-400.00	1,117.13	628.37	2.00	-2.00	0.00
6,902.85	0.00	0.00	6,770.04	-400.00	1,117.14	628.37	2.00	-2.00	0.00
Start DLS 10.00 TFO 180.00									
7,000.00	9.71	180.00	6,866.72	-408.22	1,117.14	636.40	10.00	10.00	0.00
7,100.00	19.71	180.00	6,963.32	-433.59	1,117.14	661.19	10.00	10.00	0.00
7,137.30	23.44	180.00	6,998.00	-447.30	1,117.14	674.59	10.00	10.00	0.00
Sharon Springs									
7,200.00	29.71	180.00	7,054.05	-475.34	1,117.14	701.99	10.00	10.00	0.00
7,224.43	32.16	180.00	7,075.00	-487.90	1,117.14	714.26	10.00	10.00	0.00
Niobrara A									
7,253.25	35.04	180.00	7,099.00	-503.85	1,117.14	729.85	10.00	10.00	0.00
Niobrara B									
7,300.00	39.71	180.00	7,136.14	-532.22	1,117.14	757.57	10.00	10.00	0.00
7,364.02	46.12	180.00	7,183.00	-575.79	1,117.14	800.14	10.00	10.00	0.00
Niobrara C									
7,400.00	49.71	180.00	7,207.11	-602.49	1,117.14	826.23	10.00	10.00	0.00
7,500.00	59.71	180.00	7,264.80	-684.01	1,117.14	905.89	10.00	10.00	0.00
7,600.00	69.71	180.00	7,307.46	-774.32	1,117.14	994.13	10.00	10.00	0.00
7,626.26	72.34	180.00	7,316.00	-799.15	1,117.14	1,018.40	10.00	10.00	0.00
Fort Hays									
7,700.00	79.71	180.00	7,333.79	-870.66	1,117.14	1,088.27	10.00	10.00	0.00
7,727.12	82.43	180.00	7,338.00	-897.45	1,117.14	1,114.45	10.00	10.00	0.00
Codell									
7,800.00	89.71	180.00	7,342.99	-970.11	1,117.14	1,185.45	10.00	10.00	0.00
7,801.75	89.89	180.00	7,343.00	-971.86	1,117.14	1,187.16	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 4162.29 hold at 7801.75 MD - 7"680' FNL 2043' FWL									
7,900.00	89.89	180.00	7,343.19	-1,070.11	1,117.14	1,283.16	0.00	0.00	0.00
8,000.00	89.89	180.00	7,343.38	-1,170.11	1,117.14	1,380.87	0.00	0.00	0.00
8,100.00	89.89	180.00	7,343.57	-1,270.11	1,117.14	1,478.59	0.00	0.00	0.00
8,200.00	89.89	180.00	7,343.76	-1,370.11	1,117.14	1,576.30	0.00	0.00	0.00
8,300.00	89.89	180.00	7,343.95	-1,470.11	1,117.14	1,674.01	0.00	0.00	0.00
8,400.00	89.89	180.00	7,344.15	-1,570.11	1,117.14	1,771.73	0.00	0.00	0.00
8,500.00	89.89	180.00	7,344.34	-1,670.11	1,117.14	1,869.44	0.00	0.00	0.00
8,600.00	89.89	180.00	7,344.53	-1,770.11	1,117.14	1,967.15	0.00	0.00	0.00
8,700.00	89.89	180.00	7,344.72	-1,870.10	1,117.14	2,064.87	0.00	0.00	0.00
8,800.00	89.89	180.00	7,344.92	-1,970.10	1,117.14	2,162.58	0.00	0.00	0.00
8,900.00	89.89	180.00	7,345.11	-2,070.10	1,117.14	2,260.29	0.00	0.00	0.00
9,000.00	89.89	180.00	7,345.30	-2,170.10	1,117.14	2,358.01	0.00	0.00	0.00
9,100.00	89.89	180.00	7,345.49	-2,270.10	1,117.14	2,455.72	0.00	0.00	0.00
9,200.00	89.89	180.00	7,345.69	-2,370.10	1,117.14	2,553.43	0.00	0.00	0.00
9,300.00	89.89	180.00	7,345.88	-2,470.10	1,117.14	2,651.15	0.00	0.00	0.00
9,400.00	89.89	180.00	7,346.07	-2,570.10	1,117.14	2,748.86	0.00	0.00	0.00
9,500.00	89.89	180.00	7,346.26	-2,670.10	1,117.14	2,846.57	0.00	0.00	0.00
9,600.00	89.89	180.00	7,346.45	-2,770.10	1,117.14	2,944.29	0.00	0.00	0.00
9,700.00	89.89	180.00	7,346.65	-2,870.10	1,117.14	3,042.00	0.00	0.00	0.00
9,800.00	89.89	180.00	7,346.84	-2,970.10	1,117.14	3,139.71	0.00	0.00	0.00
9,900.00	89.89	180.00	7,347.03	-3,070.10	1,117.14	3,237.43	0.00	0.00	0.00
10,000.00	89.89	180.00	7,347.22	-3,170.10	1,117.14	3,335.14	0.00	0.00	0.00
10,100.00	89.89	180.00	7,347.42	-3,270.10	1,117.14	3,432.85	0.00	0.00	0.00
10,200.00	89.89	180.00	7,347.61	-3,370.10	1,117.14	3,530.57	0.00	0.00	0.00
10,300.00	89.89	180.00	7,347.80	-3,470.10	1,117.14	3,628.28	0.00	0.00	0.00
10,400.00	89.89	180.00	7,347.99	-3,570.10	1,117.14	3,725.99	0.00	0.00	0.00
10,500.00	89.89	180.00	7,348.19	-3,670.10	1,117.14	3,823.71	0.00	0.00	0.00
10,600.00	89.89	180.00	7,348.38	-3,770.10	1,117.14	3,921.42	0.00	0.00	0.00
10,700.00	89.89	180.00	7,348.57	-3,870.10	1,117.14	4,019.13	0.00	0.00	0.00
10,800.00	89.89	180.00	7,348.76	-3,970.10	1,117.14	4,116.85	0.00	0.00	0.00
10,900.00	89.89	180.00	7,348.95	-4,070.10	1,117.14	4,214.56	0.00	0.00	0.00
11,000.00	89.89	180.00	7,349.15	-4,170.10	1,117.14	4,312.28	0.00	0.00	0.00
11,100.00	89.89	180.00	7,349.34	-4,270.10	1,117.14	4,409.99	0.00	0.00	0.00
11,200.00	89.89	180.00	7,349.53	-4,370.10	1,117.14	4,507.70	0.00	0.00	0.00
11,300.00	89.89	180.00	7,349.72	-4,470.10	1,117.14	4,605.42	0.00	0.00	0.00
11,400.00	89.89	180.00	7,349.92	-4,570.10	1,117.14	4,703.13	0.00	0.00	0.00
11,500.00	89.89	180.00	7,350.11	-4,670.10	1,117.14	4,800.84	0.00	0.00	0.00
11,600.00	89.89	180.00	7,350.30	-4,770.10	1,117.14	4,898.56	0.00	0.00	0.00
11,700.00	89.89	180.00	7,350.49	-4,870.10	1,117.14	4,996.27	0.00	0.00	0.00
11,800.00	89.89	180.00	7,350.68	-4,970.10	1,117.14	5,093.98	0.00	0.00	0.00
11,900.00	89.89	180.00	7,350.88	-5,070.10	1,117.14	5,191.70	0.00	0.00	0.00
11,964.04	89.89	180.00	7,351.00	-5,134.14	1,117.14	5,254.27	0.00	0.00	0.00
TD at 11964.04 - 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	-5,134.14	1,117.14	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	
7,801.75	7,343.00	7"680' FNL 2043' FWL	7.000	7.500	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
868.00	867.00	Fox Hills Base				
3,922.27	3,857.00	Parkman				
4,316.93	4,241.00	Sussex				
7,137.30	6,997.00	Sharon Springs				
7,224.43	7,074.00	Niobrara A				
7,253.25	7,098.00	Niobrara B				
7,364.02	7,182.00	Niobrara C				
7,626.26	7,315.00	Fort Hays				
7,727.12	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
1,767.59	1,761.57	-26.10	72.90	Start 4467.67 hold at 1767.59 MD
6,235.26	6,108.47	-373.90	1,044.23	Start Drop -2.00
6,902.85	6,770.04	-400.00	1,117.14	Start DLS 10.00 TFO 180.00
7,801.75	7,343.00	-971.86	1,117.14	Start 4162.29 hold at 7801.75 MD
11,964.04	7,351.00	-5,134.14	1,117.14	TD at 11964.04