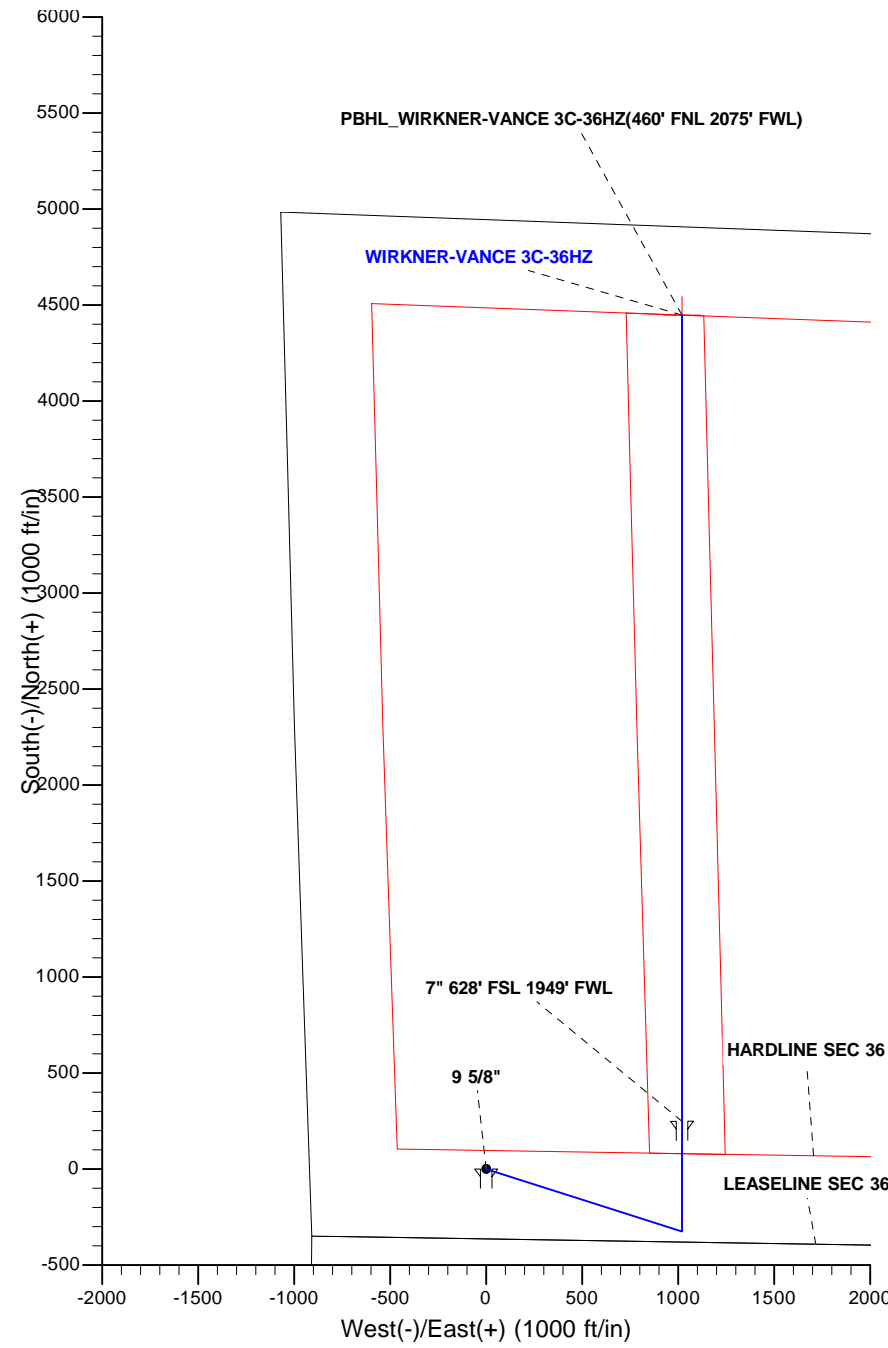
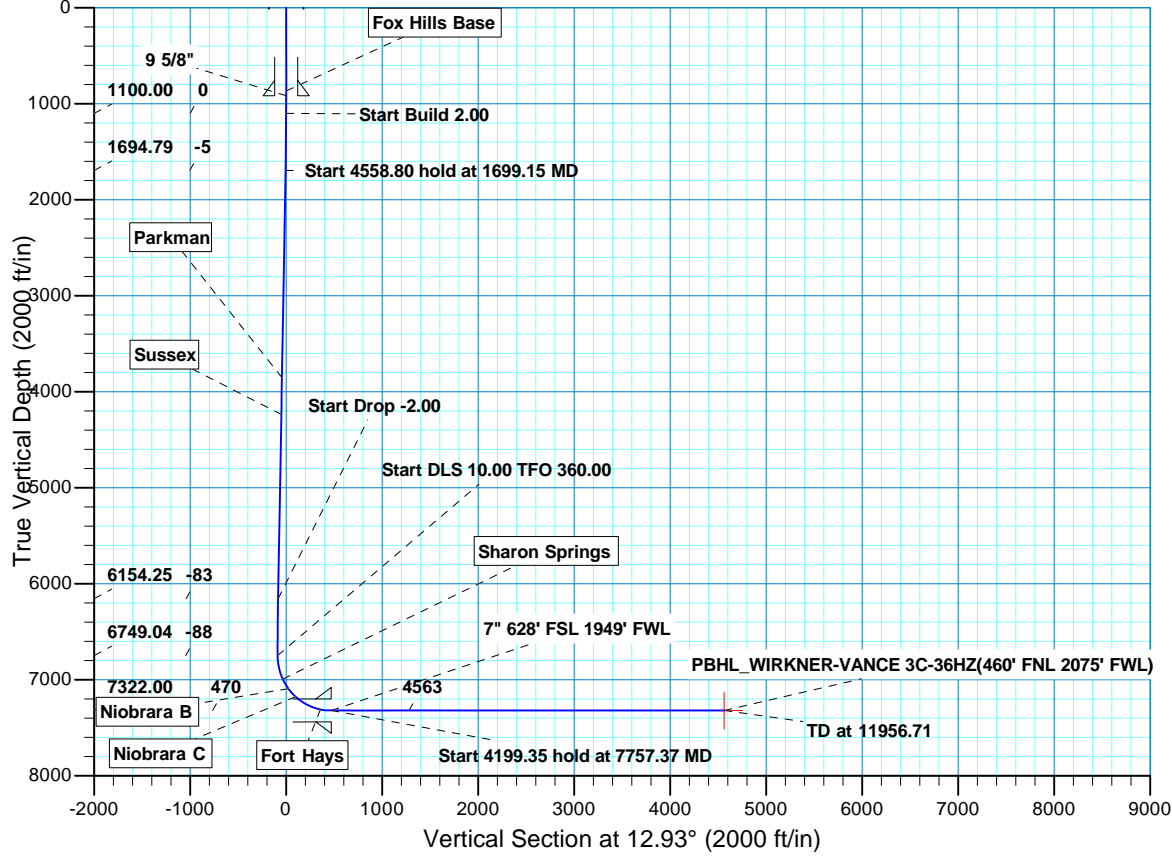


WELL DETAILS: WIRKNER-VANCE 3C-36HZ									
GL 4822 & KB 17 @ 4839.00ft (ASSUMED)									
+N-/S	+E-/W	Northing	Easting	Latitude	Longitude				
0.00	0.00	1307337.27	3183026.17	40.1751809	-104.8450050				
SECTION DETAILS									
MD	Inc	Azi	TVD	+N-/S	+E-/W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	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	0.00
1699.15	11.98	107.66	1694.79	-18.94	59.48	2.00	107.66	-5.15	
6257.95	11.98	107.66	6154.25	-306.06	961.39	0.00	0.00	-83.23	
6857.10	0.00	0.00	6749.04	-325.00	1020.87	2.00	180.00	-88.38	
7757.37	90.03	360.00	7322.00	248.23	1020.87	10.00	360.00	470.32	
11956.72	90.03	360.00	7320.00	4447.58	1020.87	0.00	0.004563.24		PBHL_WIRKNER-VANCE 3C-36HZ(460' FNL 2075' FWL)
FORMATION TOP DETAILS				CASING DETAILS					
TVDPATH	MDPATH	FORMATION	DIPDIRINC	TVD	MD	NAME	SIZE		
867.00	867.00	Fox Hills Base	0.00	917.00	917.00	9 5/8"	9.625		
3852.00	3904.41	Parkman	11.98	7322.00	7757.37	7"	7.000		
4236.00	4296.97	Sussex	11.98						
6992.00	7108.00	Sharon Springs	25.09						
7069.00	7196.57	Niobrara A	33.95						
7093.00	7226.03	Niobrara B	36.89						
7177.00	7340.35	Niobrara C	48.33						
7310.00	7639.64	Fort Hays	78.25						





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WIRKNER-VANCE 3C-36HZ PAD

WIRKNER-VANCE 3C-36HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

20 June, 2013

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 3C-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 3C-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:	1,307,426.46 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 3C-36HZ, 363 FSL 919 FWL					
Well Position	+N/-S	-89.28 ft	Northing:	1,307,337.27 usft	Latitude:	40.1751809
	+E/-W	10.62 ft	Easting:	3,183,026.17 usft	Longitude:	-104.8450050
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	8.64	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	12.93

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	
1,699.15	11.98	107.66	1,694.79	-18.94	59.48	2.00	2.00	0.00	107.66	
6,257.95	11.98	107.66	6,154.25	-306.06	961.39	0.00	0.00	0.00	0.00	
6,857.10	0.00	0.00	6,749.04	-325.00	1,020.87	2.00	-2.00	0.00	180.00	
7,757.37	90.03	360.00	7,322.00	248.23	1,020.87	10.00	10.00	0.00	360.00	
11,956.72	90.03	360.00	7,320.00	4,447.58	1,020.87	0.00	0.00	0.00	0.00	PBHL_WIRKNER-VA

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 3C-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 3C-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	0.00
100.00	0.00	0.00	100.00	0.00	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	0.00
300.00	0.00	0.00	300.00	0.00	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	0.00
500.00	0.00	0.00	500.00	0.00	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	0.00
700.00	0.00	0.00	700.00	0.00	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	0.00
867.00	0.00	0.00	867.00	0.00	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	0.00
917.00	0.00	0.00	917.00	0.00	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	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00										
1,200.00	2.00	107.66	1,199.98	-0.53	1.66	-0.14	2.00	2.00	0.00	0.00
1,300.00	4.00	107.66	1,299.84	-2.12	6.65	-0.58	2.00	2.00	0.00	0.00
1,400.00	6.00	107.66	1,399.45	-4.76	14.95	-1.29	2.00	2.00	0.00	0.00
1,500.00	8.00	107.66	1,498.70	-8.46	26.57	-2.30	2.00	2.00	0.00	0.00
1,600.00	10.00	107.66	1,597.47	-13.20	41.47	-3.59	2.00	2.00	0.00	0.00
1,699.15	11.98	107.66	1,694.79	-18.94	59.48	-5.15	2.00	2.00	0.00	0.00
Start 4558.80 hold at 1699.15 MD										
1,700.00	11.98	107.66	1,695.62	-18.99	59.65	-5.16	0.00	0.00	0.00	0.00
1,800.00	11.98	107.66	1,793.44	-25.29	79.44	-6.88	0.00	0.00	0.00	0.00
1,900.00	11.98	107.66	1,891.27	-31.59	99.22	-8.59	0.00	0.00	0.00	0.00
2,000.00	11.98	107.66	1,989.09	-37.89	119.00	-10.30	0.00	0.00	0.00	0.00
2,100.00	11.98	107.66	2,086.91	-44.18	138.79	-12.01	0.00	0.00	0.00	0.00
2,200.00	11.98	107.66	2,184.73	-50.48	158.57	-13.73	0.00	0.00	0.00	0.00
2,300.00	11.98	107.66	2,282.55	-56.78	178.36	-15.44	0.00	0.00	0.00	0.00
2,400.00	11.98	107.66	2,380.37	-63.08	198.14	-17.15	0.00	0.00	0.00	0.00
2,500.00	11.98	107.66	2,478.19	-69.38	217.92	-18.87	0.00	0.00	0.00	0.00
2,600.00	11.98	107.66	2,576.01	-75.68	237.71	-20.58	0.00	0.00	0.00	0.00
2,700.00	11.98	107.66	2,673.83	-81.97	257.49	-22.29	0.00	0.00	0.00	0.00
2,800.00	11.98	107.66	2,771.65	-88.27	277.27	-24.00	0.00	0.00	0.00	0.00
2,900.00	11.98	107.66	2,869.47	-94.57	297.06	-25.72	0.00	0.00	0.00	0.00
3,000.00	11.98	107.66	2,967.30	-100.87	316.84	-27.43	0.00	0.00	0.00	0.00
3,100.00	11.98	107.66	3,065.12	-107.17	336.63	-29.14	0.00	0.00	0.00	0.00
3,200.00	11.98	107.66	3,162.94	-113.46	356.41	-30.85	0.00	0.00	0.00	0.00
3,300.00	11.98	107.66	3,260.76	-119.76	376.19	-32.57	0.00	0.00	0.00	0.00
3,400.00	11.98	107.66	3,358.58	-126.06	395.98	-34.28	0.00	0.00	0.00	0.00
3,500.00	11.98	107.66	3,456.40	-132.36	415.76	-35.99	0.00	0.00	0.00	0.00
3,600.00	11.98	107.66	3,554.22	-138.66	435.54	-37.71	0.00	0.00	0.00	0.00
3,700.00	11.98	107.66	3,652.04	-144.96	455.33	-39.42	0.00	0.00	0.00	0.00
3,800.00	11.98	107.66	3,749.86	-151.25	475.11	-41.13	0.00	0.00	0.00	0.00
3,900.00	11.98	107.66	3,847.68	-157.55	494.90	-42.84	0.00	0.00	0.00	0.00
3,904.41	11.98	107.66	3,852.00	-157.83	495.77	-42.92	0.00	0.00	0.00	0.00
Parkman										
4,000.00	11.98	107.66	3,945.50	-163.85	514.68	-44.56	0.00	0.00	0.00	0.00
4,100.00	11.98	107.66	4,043.33	-170.15	534.46	-46.27	0.00	0.00	0.00	0.00
4,200.00	11.98	107.66	4,141.15	-176.45	554.25	-47.98	0.00	0.00	0.00	0.00
4,296.97	11.98	107.66	4,236.00	-182.55	573.43	-49.64	0.00	0.00	0.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 3C-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 3C-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	11.98	107.66	4,238.97	-182.75	574.03	-49.69	0.00	0.00	0.00
4,400.00	11.98	107.66	4,336.79	-189.04	593.81	-51.41	0.00	0.00	0.00
4,500.00	11.98	107.66	4,434.61	-195.34	613.60	-53.12	0.00	0.00	0.00
4,600.00	11.98	107.66	4,532.43	-201.64	633.38	-54.83	0.00	0.00	0.00
4,700.00	11.98	107.66	4,630.25	-207.94	653.17	-56.54	0.00	0.00	0.00
4,800.00	11.98	107.66	4,728.07	-214.24	672.95	-58.26	0.00	0.00	0.00
4,900.00	11.98	107.66	4,825.89	-220.54	692.73	-59.97	0.00	0.00	0.00
5,000.00	11.98	107.66	4,923.71	-226.83	712.52	-61.68	0.00	0.00	0.00
5,100.00	11.98	107.66	5,021.53	-233.13	732.30	-63.40	0.00	0.00	0.00
5,200.00	11.98	107.66	5,119.36	-239.43	752.08	-65.11	0.00	0.00	0.00
5,300.00	11.98	107.66	5,217.18	-245.73	771.87	-66.82	0.00	0.00	0.00
5,400.00	11.98	107.66	5,315.00	-252.03	791.65	-68.53	0.00	0.00	0.00
5,500.00	11.98	107.66	5,412.82	-258.33	811.44	-70.25	0.00	0.00	0.00
5,600.00	11.98	107.66	5,510.64	-264.62	831.22	-71.96	0.00	0.00	0.00
5,700.00	11.98	107.66	5,608.46	-270.92	851.00	-73.67	0.00	0.00	0.00
5,800.00	11.98	107.66	5,706.28	-277.22	870.79	-75.38	0.00	0.00	0.00
5,900.00	11.98	107.66	5,804.10	-283.52	890.57	-77.10	0.00	0.00	0.00
6,000.00	11.98	107.66	5,901.92	-289.82	910.35	-78.81	0.00	0.00	0.00
6,100.00	11.98	107.66	5,999.74	-296.11	930.14	-80.52	0.00	0.00	0.00
6,200.00	11.98	107.66	6,097.57	-302.41	949.92	-82.24	0.00	0.00	0.00
6,257.95	11.98	107.66	6,154.25	-306.06	961.39	-83.23	0.00	0.00	0.00
Start Drop -2.00									
6,300.00	11.14	107.66	6,195.45	-308.62	969.42	-83.92	2.00	-2.00	0.00
6,400.00	9.14	107.66	6,293.88	-313.96	986.20	-85.38	2.00	-2.00	0.00
6,500.00	7.14	107.66	6,392.87	-318.26	999.69	-86.54	2.00	-2.00	0.00
6,600.00	5.14	107.66	6,492.29	-321.50	1,009.89	-87.43	2.00	-2.00	0.00
6,700.00	3.14	107.66	6,592.02	-323.69	1,016.77	-88.02	2.00	-2.00	0.00
6,800.00	1.14	107.66	6,691.95	-324.83	1,020.33	-88.33	2.00	-2.00	0.00
6,857.10	0.00	0.00	6,749.04	-325.00	1,020.87	-88.38	2.00	-2.00	0.00
Start DLS 10.00 TFO 360.00									
6,900.00	4.29	360.00	6,791.90	-323.39	1,020.87	-86.81	10.00	10.00	0.00
7,000.00	14.29	360.00	6,890.47	-307.27	1,020.87	-71.10	10.00	10.00	0.00
7,100.00	24.29	360.00	6,984.73	-274.28	1,020.87	-38.94	10.00	10.00	0.00
7,108.00	25.09	360.00	6,992.00	-270.94	1,020.87	-35.68	10.00	10.00	0.00
Sharon Springs									
7,196.57	33.95	360.00	7,069.00	-227.34	1,020.87	6.81	10.00	10.00	0.00
Niobrara A									
7,200.00	34.29	360.00	7,071.84	-225.42	1,020.87	8.68	10.00	10.00	0.00
7,226.03	36.89	360.00	7,093.00	-210.27	1,020.87	23.45	10.00	10.00	0.00
Niobrara B									
7,300.00	44.29	360.00	7,149.13	-162.17	1,020.87	70.32	10.00	10.00	0.00
7,340.35	48.33	360.00	7,177.00	-133.00	1,020.87	98.75	10.00	10.00	0.00
Niobrara C									
7,400.00	54.29	360.00	7,214.27	-86.46	1,020.87	144.11	10.00	10.00	0.00
7,500.00	64.29	360.00	7,265.28	-0.60	1,020.87	227.80	10.00	10.00	0.00
7,600.00	74.29	360.00	7,300.60	92.82	1,020.87	318.86	10.00	10.00	0.00
7,639.64	78.25	360.00	7,310.00	131.32	1,020.87	356.38	10.00	10.00	0.00
Fort Hays									
7,700.00	84.29	360.00	7,319.16	190.96	1,020.87	414.50	10.00	10.00	0.00
7,757.37	90.03	360.00	7,322.00	248.23	1,020.87	470.33	10.00	10.00	0.00
Start 4199.35 hold at 7757.37 MD - 7" 628' FSL 1949' FWL									
7,800.00	90.03	360.00	7,321.98	290.86	1,020.87	511.88	0.00	0.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 3C-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 3C-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)	
7,900.00	90.03	360.00	7,321.93	390.86	1,020.87	609.34	0.00	0.00	0.00	
8,000.00	90.03	360.00	7,321.88	490.86	1,020.87	706.81	0.00	0.00	0.00	
8,100.00	90.03	360.00	7,321.83	590.86	1,020.87	804.27	0.00	0.00	0.00	
8,200.00	90.03	360.00	7,321.79	690.86	1,020.87	901.74	0.00	0.00	0.00	
8,300.00	90.03	360.00	7,321.74	790.86	1,020.87	999.20	0.00	0.00	0.00	
8,400.00	90.03	360.00	7,321.69	890.86	1,020.87	1,096.67	0.00	0.00	0.00	
8,500.00	90.03	360.00	7,321.64	990.86	1,020.87	1,194.13	0.00	0.00	0.00	
8,600.00	90.03	360.00	7,321.60	1,090.86	1,020.87	1,291.60	0.00	0.00	0.00	
8,700.00	90.03	360.00	7,321.55	1,190.86	1,020.87	1,389.06	0.00	0.00	0.00	
8,800.00	90.03	360.00	7,321.50	1,290.86	1,020.87	1,486.53	0.00	0.00	0.00	
8,900.00	90.03	360.00	7,321.45	1,390.86	1,020.87	1,583.99	0.00	0.00	0.00	
9,000.00	90.03	360.00	7,321.41	1,490.86	1,020.87	1,681.46	0.00	0.00	0.00	
9,100.00	90.03	360.00	7,321.36	1,590.86	1,020.87	1,778.93	0.00	0.00	0.00	
9,200.00	90.03	360.00	7,321.31	1,690.86	1,020.87	1,876.39	0.00	0.00	0.00	
9,300.00	90.03	360.00	7,321.26	1,790.86	1,020.87	1,973.86	0.00	0.00	0.00	
9,400.00	90.03	360.00	7,321.22	1,890.86	1,020.87	2,071.32	0.00	0.00	0.00	
9,500.00	90.03	360.00	7,321.17	1,990.86	1,020.87	2,168.79	0.00	0.00	0.00	
9,600.00	90.03	360.00	7,321.12	2,090.86	1,020.87	2,266.25	0.00	0.00	0.00	
9,700.00	90.03	360.00	7,321.07	2,190.86	1,020.87	2,363.72	0.00	0.00	0.00	
9,800.00	90.03	360.00	7,321.03	2,290.86	1,020.87	2,461.18	0.00	0.00	0.00	
9,900.00	90.03	360.00	7,320.98	2,390.86	1,020.87	2,558.65	0.00	0.00	0.00	
10,000.00	90.03	360.00	7,320.93	2,490.86	1,020.87	2,656.11	0.00	0.00	0.00	
10,100.00	90.03	360.00	7,320.88	2,590.86	1,020.87	2,753.58	0.00	0.00	0.00	
10,200.00	90.03	360.00	7,320.84	2,690.86	1,020.87	2,851.05	0.00	0.00	0.00	
10,300.00	90.03	360.00	7,320.79	2,790.86	1,020.87	2,948.51	0.00	0.00	0.00	
10,400.00	90.03	360.00	7,320.74	2,890.86	1,020.87	3,045.98	0.00	0.00	0.00	
10,500.00	90.03	360.00	7,320.69	2,990.86	1,020.87	3,143.44	0.00	0.00	0.00	
10,600.00	90.03	360.00	7,320.65	3,090.86	1,020.87	3,240.91	0.00	0.00	0.00	
10,700.00	90.03	360.00	7,320.60	3,190.86	1,020.87	3,338.37	0.00	0.00	0.00	
10,800.00	90.03	360.00	7,320.55	3,290.86	1,020.87	3,435.84	0.00	0.00	0.00	
10,900.00	90.03	360.00	7,320.50	3,390.86	1,020.87	3,533.30	0.00	0.00	0.00	
11,000.00	90.03	360.00	7,320.46	3,490.86	1,020.87	3,630.77	0.00	0.00	0.00	
11,100.00	90.03	360.00	7,320.41	3,590.86	1,020.87	3,728.23	0.00	0.00	0.00	
11,200.00	90.03	360.00	7,320.36	3,690.86	1,020.87	3,825.70	0.00	0.00	0.00	
11,300.00	90.03	360.00	7,320.31	3,790.86	1,020.87	3,923.16	0.00	0.00	0.00	
11,400.00	90.03	360.00	7,320.27	3,890.86	1,020.87	4,020.63	0.00	0.00	0.00	
11,500.00	90.03	360.00	7,320.22	3,990.86	1,020.87	4,118.10	0.00	0.00	0.00	
11,600.00	90.03	360.00	7,320.17	4,090.86	1,020.87	4,215.56	0.00	0.00	0.00	
11,700.00	90.03	360.00	7,320.12	4,190.86	1,020.87	4,313.03	0.00	0.00	0.00	
11,800.00	90.03	360.00	7,320.07	4,290.86	1,020.87	4,410.49	0.00	0.00	0.00	
11,900.00	90.03	360.00	7,320.03	4,390.86	1,020.87	4,507.96	0.00	0.00	0.00	
11,956.71	90.03	360.00	7,320.00	4,447.58	1,020.87	4,563.23	0.00	0.00	0.00	
TD at 11956.71 - PBHL_WIRKNER-VANCE 3C-36HZ(460' FNL 2075' FWL)										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
PBHL_WIRKNER-VANC - hit/miss target - Shape - Point	0.00	0.00	7,320.00	4,447.58	1,020.87	1,311,792.26	3,184,014.16	40.1873900	-104.8413510	

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 3C-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 3C-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
7,757.37	7,322.00	7" 628' FSL 1949' FWL		7.000	7.500

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
867.00	867.00	Fox Hills Base			
3,904.41	3,852.00	Parkman			
4,296.97	4,236.00	Sussex			
7,108.00	6,992.00	Sharon Springs			
7,196.57	7,069.00	Niobrara A			
7,226.03	7,093.00	Niobrara B			
7,340.35	7,177.00	Niobrara C			
7,639.64	7,310.00	Fort Hays			

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	
1,699.15	1,694.79	-18.94	59.48	Start 4558.80 hold at 1699.15 MD	
6,257.95	6,154.25	-306.06	961.39	Start Drop -2.00	
6,857.10	6,749.04	-325.00	1,020.87	Start DLS 10.00 TFO 360.00	
7,757.37	7,322.00	248.23	1,020.87	Start 4199.35 hold at 7757.37 MD	
11,956.71	7,320.00	4,447.58	1,020.87	TD at 11956.71	