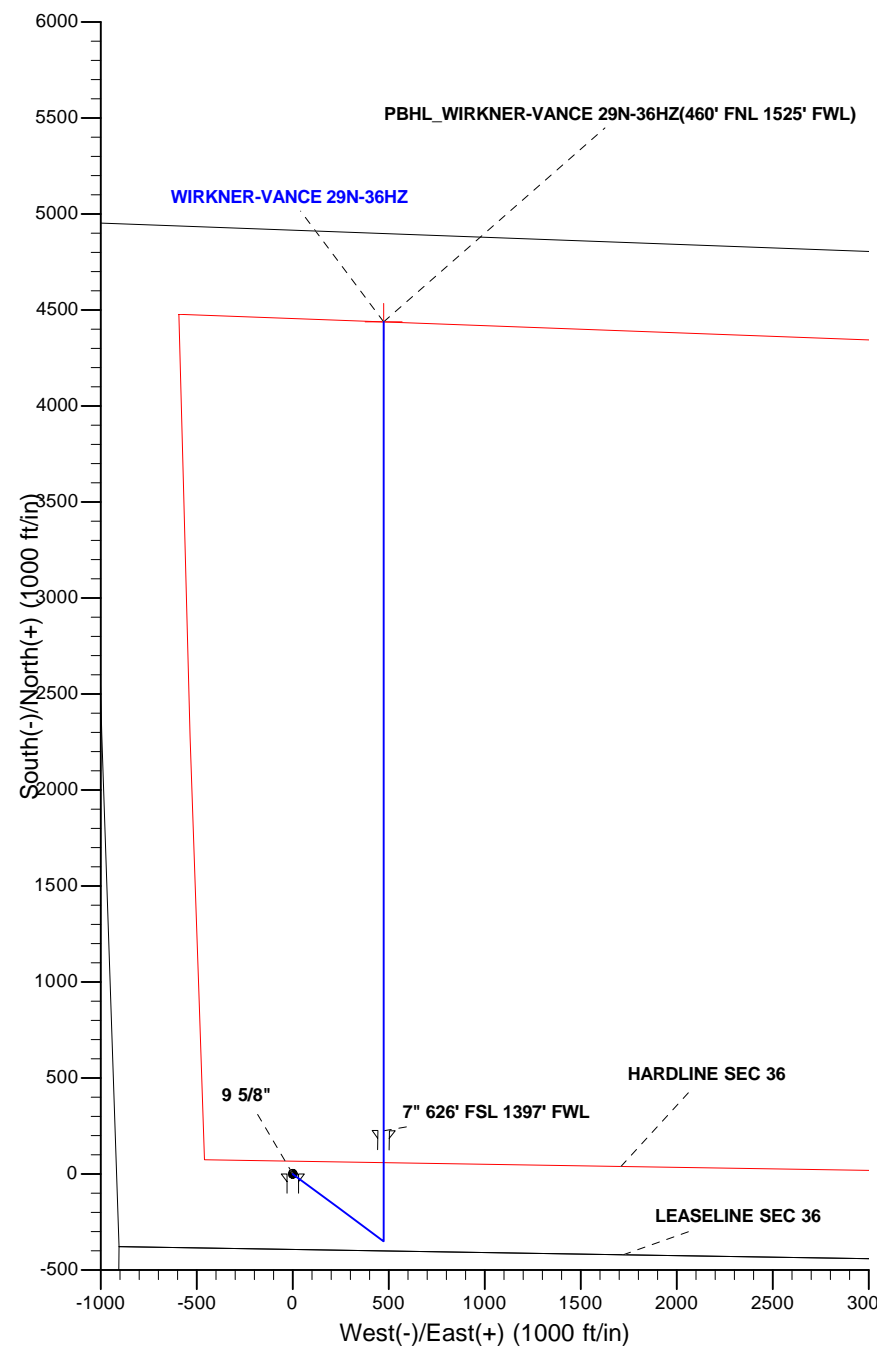
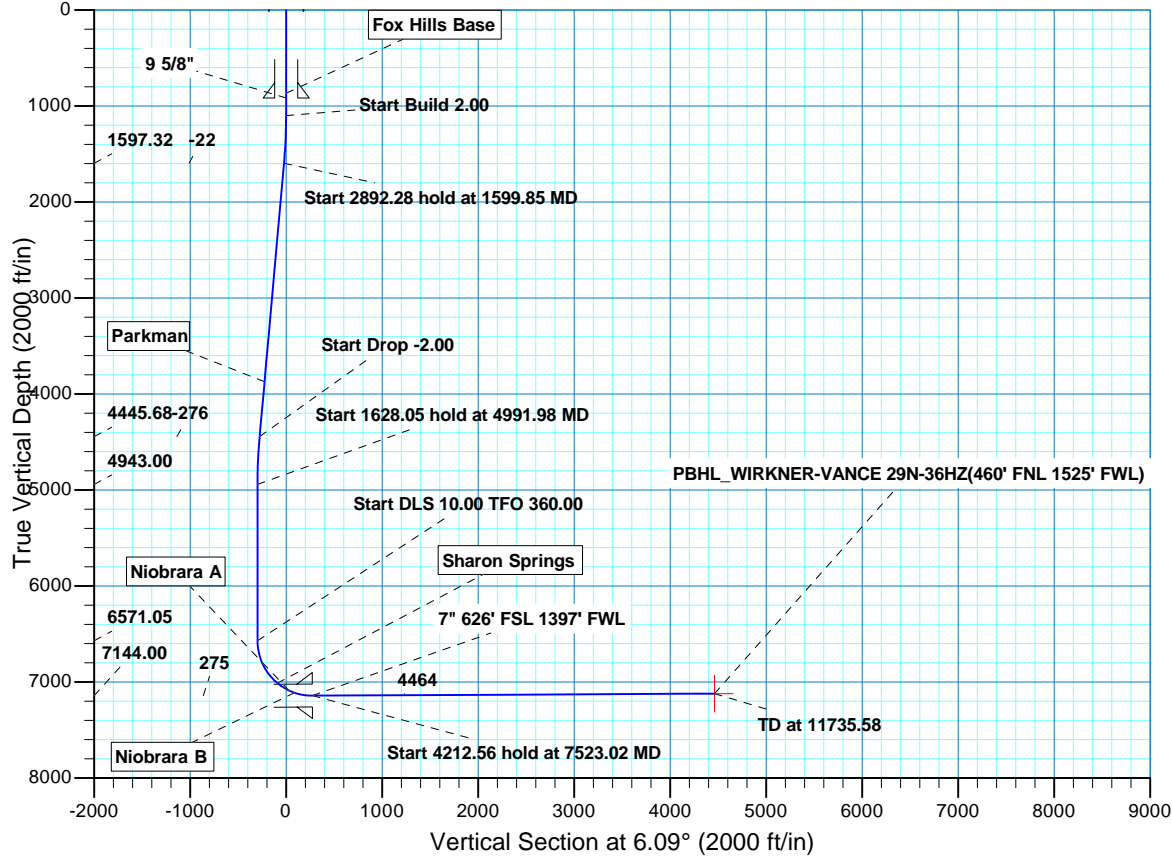




Project: COLORADO NORTHERN ZONE - 83
Site: WIRKNER-VANCE 3C-36HZ PAD
Well: WIRKNER-VANCE 29N-36HZ
Wellbore: OH
Design: PLAN #1 PRELIMINARY



WELL DETAILS: WIRKNER-VANCE 29N-36HZ											
GL 4822 & KB 17 @ 4839.00ft (ASSUMED)											
+N/-S		+E/-W		Northing		Easting		Latitude		Longitude	
0.00		0.00		1307366.75		3183022.32		40.1752619		-104.8450180	
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		
1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	0.00	0.00		
1599.85	10.00	126.45	1597.32	-25.84	34.99	2.00	126.45	-21.98			
4492.13	10.00	126.45	4445.68	-324.16	438.85	0.00	0.00	-275.74			
4991.98	0.00	0.00	4943.00	-350.00	473.84	2.00	180.00	-297.72			
6620.03	0.00	0.00	6571.05	-350.00	473.84	0.00	0.00	-297.72			
7523.02	90.30	0.00	7144.00	225.95	473.84	10.00	0.00	274.97			
11735.58	90.30	0.00	7122.00	4438.46	473.84	0.00	0.004463.68	PBHL WIRKNER-VANCE 29N-36HZ(460' FNL 1525' 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	
3872.00	3909.60	Parkman		10.00		7144.00		7523.02	7"	7.000	
4256.00	4299.52	Sussex		10.00							
7012.00	7123.21	Sharon Springs		50.32							
7089.00	7266.91	Niobrara A		64.69							
7113.00	7330.67	Niobrara B		71.06							





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WIRKNER-VANCE 3C-36HZ PAD

WIRKNER-VANCE 29N-36HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

20 June, 2013

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 29N-36HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4822 & KB 17 @ 4839.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4822 & KB 17 @ 4839.00ft (Original Well Elev)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 29N-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 29N-36HZ, 393 FSL 917 FWL					
Well Position	+N/-S	-59.77 ft	Northing:	1,307,366.75 usft	Latitude:	40.1752620
	+E/-W	6.99 ft	Easting:	3,183,022.32 usft	Longitude:	-104.8450180
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	6.09

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	
1,599.85	10.00	126.45	1,597.32	-25.84	34.99	2.00	2.00	0.00	126.45	
4,492.13	10.00	126.45	4,445.68	-324.16	438.85	0.00	0.00	0.00	0.00	
4,991.98	0.00	0.00	4,943.00	-350.00	473.84	2.00	-2.00	0.00	180.00	
6,620.03	0.00	0.00	6,571.05	-350.00	473.84	0.00	0.00	0.00	0.00	
7,523.02	90.30	360.00	7,144.00	225.95	473.84	10.00	10.00	0.00	360.00	
11,735.58	90.30	360.00	7,122.00	4,438.45	473.84	0.00	0.00	0.00	0.00	PBHL_WIRKNER-VA

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 29N-36HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4822 & KB 17 @ 4839.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4822 & KB 17 @ 4839.00ft (Original Well Elev)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 29N-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	126.45	1,199.98	-1.04	1.40	-0.88	2.00	2.00	0.00
1,300.00	4.00	126.45	1,299.84	-4.15	5.61	-3.53	2.00	2.00	0.00
1,400.00	6.00	126.45	1,399.45	-9.32	12.62	-7.93	2.00	2.00	0.00
1,500.00	8.00	126.45	1,498.70	-16.56	22.43	-14.09	2.00	2.00	0.00
1,599.85	10.00	126.45	1,597.32	-25.84	34.99	-21.98	2.00	2.00	0.00
Start 2892.28 hold at 1599.85 MD									
1,600.00	10.00	126.45	1,597.47	-25.86	35.01	-22.00	0.00	0.00	0.00
1,700.00	10.00	126.45	1,695.95	-36.17	48.97	-30.77	0.00	0.00	0.00
1,800.00	10.00	126.45	1,794.43	-46.49	62.93	-39.54	0.00	0.00	0.00
1,900.00	10.00	126.45	1,892.91	-56.80	76.90	-48.32	0.00	0.00	0.00
2,000.00	10.00	126.45	1,991.39	-67.12	90.86	-57.09	0.00	0.00	0.00
2,100.00	10.00	126.45	2,089.87	-77.43	104.83	-65.86	0.00	0.00	0.00
2,200.00	10.00	126.45	2,188.36	-87.74	118.79	-74.64	0.00	0.00	0.00
2,300.00	10.00	126.45	2,286.84	-98.06	132.75	-83.41	0.00	0.00	0.00
2,400.00	10.00	126.45	2,385.32	-108.37	146.72	-92.19	0.00	0.00	0.00
2,500.00	10.00	126.45	2,483.80	-118.69	160.68	-100.96	0.00	0.00	0.00
2,600.00	10.00	126.45	2,582.28	-129.00	174.64	-109.73	0.00	0.00	0.00
2,700.00	10.00	126.45	2,680.76	-139.31	188.61	-118.51	0.00	0.00	0.00
2,800.00	10.00	126.45	2,779.25	-149.63	202.57	-127.28	0.00	0.00	0.00
2,900.00	10.00	126.45	2,877.73	-159.94	216.53	-136.05	0.00	0.00	0.00
3,000.00	10.00	126.45	2,976.21	-170.26	230.50	-144.83	0.00	0.00	0.00
3,100.00	10.00	126.45	3,074.69	-180.57	244.46	-153.60	0.00	0.00	0.00
3,200.00	10.00	126.45	3,173.17	-190.88	258.42	-162.37	0.00	0.00	0.00
3,300.00	10.00	126.45	3,271.65	-201.20	272.39	-171.15	0.00	0.00	0.00
3,400.00	10.00	126.45	3,370.14	-211.51	286.35	-179.92	0.00	0.00	0.00
3,500.00	10.00	126.45	3,468.62	-221.83	300.31	-188.69	0.00	0.00	0.00
3,600.00	10.00	126.45	3,567.10	-232.14	314.28	-197.47	0.00	0.00	0.00
3,700.00	10.00	126.45	3,665.58	-242.46	328.24	-206.24	0.00	0.00	0.00
3,800.00	10.00	126.45	3,764.06	-252.77	342.20	-215.02	0.00	0.00	0.00
3,900.00	10.00	126.45	3,862.54	-263.08	356.17	-223.79	0.00	0.00	0.00
3,909.60	10.00	126.45	3,872.00	-264.07	357.51	-224.63	0.00	0.00	0.00
Parkman									
4,000.00	10.00	126.45	3,961.03	-273.40	370.13	-232.56	0.00	0.00	0.00
4,100.00	10.00	126.45	4,059.51	-283.71	384.09	-241.34	0.00	0.00	0.00

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Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4822 & KB 17 @ 4839.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4822 & KB 17 @ 4839.00ft (Original Well Elev)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 29N-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)	
4,200.00	10.00	126.45	4,157.99	-294.03	398.06	-250.11	0.00	0.00	0.00	
4,299.52	10.00	126.45	4,256.00	-304.29	411.95	-258.84	0.00	0.00	0.00	
Sussex										
4,300.00	10.00	126.45	4,256.47	-304.34	412.02	-258.88	0.00	0.00	0.00	
4,400.00	10.00	126.45	4,354.95	-314.65	425.98	-267.66	0.00	0.00	0.00	
4,492.13	10.00	126.45	4,445.68	-324.16	438.85	-275.74	0.00	0.00	0.00	
Start Drop -2.00										
4,500.00	9.84	126.45	4,453.44	-324.96	439.94	-276.43	2.00	-2.00	0.00	
4,600.00	7.84	126.45	4,552.24	-334.09	452.30	-284.19	2.00	-2.00	0.00	
4,700.00	5.84	126.45	4,651.53	-341.17	461.88	-290.21	2.00	-2.00	0.00	
4,800.00	3.84	126.45	4,751.16	-346.18	468.66	-294.47	2.00	-2.00	0.00	
4,900.00	1.84	126.45	4,851.04	-349.12	472.65	-296.98	2.00	-2.00	0.00	
4,991.98	0.00	0.00	4,943.00	-350.00	473.84	-297.72	2.00	-2.00	0.00	
Start 1628.05 hold at 4991.98 MD										
5,000.00	0.00	0.00	4,951.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
5,100.00	0.00	0.00	5,051.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,151.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,251.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,351.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,451.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,551.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,651.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,751.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,851.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
6,000.00	0.00	0.00	5,951.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
6,100.00	0.00	0.00	6,051.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,151.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,251.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,351.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,451.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,551.02	-350.00	473.84	-297.72	0.00	0.00	0.00	
6,620.03	0.00	0.00	6,571.05	-350.00	473.84	-297.72	0.00	0.00	0.00	
Start DLS 10.00 TFO 360.00										
6,700.00	8.00	360.00	6,650.76	-344.43	473.84	-292.18	10.00	10.00	0.00	
6,800.00	18.00	360.00	6,748.08	-321.97	473.84	-269.85	10.00	10.00	0.00	
6,900.00	28.00	360.00	6,840.01	-282.95	473.84	-231.05	10.00	10.00	0.00	
7,000.00	38.00	360.00	6,923.78	-228.56	473.84	-176.97	10.00	10.00	0.00	
7,100.00	48.00	360.00	6,996.82	-160.45	473.84	-109.24	10.00	10.00	0.00	
7,123.21	50.32	360.00	7,012.00	-142.89	473.84	-91.78	10.00	10.00	0.00	
Sharon Springs										
7,200.00	58.00	360.00	7,056.93	-80.69	473.84	-29.93	10.00	10.00	0.00	
7,266.91	64.69	360.00	7,089.00	-22.01	473.84	28.42	10.00	10.00	0.00	
Niobrara A										
7,300.00	68.00	360.00	7,102.28	8.30	473.84	58.55	10.00	10.00	0.00	
7,330.67	71.06	360.00	7,113.00	37.03	473.84	87.12	10.00	10.00	0.00	
Niobrara B										
7,400.00	78.00	360.00	7,131.48	103.80	473.84	153.52	10.00	10.00	0.00	
7,500.00	88.00	360.00	7,143.66	202.93	473.84	252.09	10.00	10.00	0.00	
7,523.02	90.30	360.00	7,144.00	225.95	473.84	274.97	10.00	10.00	0.00	
Start 4212.56 hold at 7523.02 MD - 7" 626' FSL 1397' FWL										
7,600.00	90.30	360.00	7,143.60	302.93	473.84	351.52	0.00	0.00	0.00	

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4822 & KB 17 @ 4839.00ft (Original Well Elev)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 29N-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)
7,700.00	90.30	360.00	7,143.08	402.93	473.84	450.95	0.00	0.00	0.00
7,800.00	90.30	360.00	7,142.55	502.93	473.84	550.38	0.00	0.00	0.00
7,900.00	90.30	360.00	7,142.03	602.92	473.84	649.82	0.00	0.00	0.00
8,000.00	90.30	360.00	7,141.51	702.92	473.84	749.25	0.00	0.00	0.00
8,100.00	90.30	360.00	7,140.99	802.92	473.84	848.68	0.00	0.00	0.00
8,200.00	90.30	360.00	7,140.46	902.92	473.84	948.12	0.00	0.00	0.00
8,300.00	90.30	360.00	7,139.94	1,002.92	473.84	1,047.55	0.00	0.00	0.00
8,400.00	90.30	360.00	7,139.42	1,102.92	473.84	1,146.98	0.00	0.00	0.00
8,500.00	90.30	360.00	7,138.90	1,202.92	473.84	1,246.42	0.00	0.00	0.00
8,600.00	90.30	360.00	7,138.38	1,302.91	473.84	1,345.85	0.00	0.00	0.00
8,700.00	90.30	360.00	7,137.85	1,402.91	473.84	1,445.29	0.00	0.00	0.00
8,800.00	90.30	360.00	7,137.33	1,502.91	473.84	1,544.72	0.00	0.00	0.00
8,900.00	90.30	360.00	7,136.81	1,602.91	473.84	1,644.15	0.00	0.00	0.00
9,000.00	90.30	360.00	7,136.29	1,702.91	473.84	1,743.59	0.00	0.00	0.00
9,100.00	90.30	360.00	7,135.76	1,802.91	473.84	1,843.02	0.00	0.00	0.00
9,200.00	90.30	360.00	7,135.24	1,902.91	473.84	1,942.45	0.00	0.00	0.00
9,300.00	90.30	360.00	7,134.72	2,002.90	473.84	2,041.89	0.00	0.00	0.00
9,400.00	90.30	360.00	7,134.20	2,102.90	473.84	2,141.32	0.00	0.00	0.00
9,500.00	90.30	360.00	7,133.68	2,202.90	473.84	2,240.75	0.00	0.00	0.00
9,600.00	90.30	360.00	7,133.15	2,302.90	473.84	2,340.19	0.00	0.00	0.00
9,700.00	90.30	360.00	7,132.63	2,402.90	473.84	2,439.62	0.00	0.00	0.00
9,800.00	90.30	360.00	7,132.11	2,502.90	473.84	2,539.06	0.00	0.00	0.00
9,900.00	90.30	360.00	7,131.59	2,602.90	473.84	2,638.49	0.00	0.00	0.00
10,000.00	90.30	360.00	7,131.06	2,702.90	473.84	2,737.92	0.00	0.00	0.00
10,100.00	90.30	360.00	7,130.54	2,802.89	473.84	2,837.36	0.00	0.00	0.00
10,200.00	90.30	360.00	7,130.02	2,902.89	473.84	2,936.79	0.00	0.00	0.00
10,300.00	90.30	360.00	7,129.50	3,002.89	473.84	3,036.22	0.00	0.00	0.00
10,400.00	90.30	360.00	7,128.98	3,102.89	473.84	3,135.66	0.00	0.00	0.00
10,500.00	90.30	360.00	7,128.45	3,202.89	473.84	3,235.09	0.00	0.00	0.00
10,600.00	90.30	360.00	7,127.93	3,302.89	473.84	3,334.52	0.00	0.00	0.00
10,700.00	90.30	360.00	7,127.41	3,402.89	473.84	3,433.96	0.00	0.00	0.00
10,800.00	90.30	360.00	7,126.89	3,502.88	473.84	3,533.39	0.00	0.00	0.00
10,900.00	90.30	360.00	7,126.36	3,602.88	473.84	3,632.83	0.00	0.00	0.00
11,000.00	90.30	360.00	7,125.84	3,702.88	473.84	3,732.26	0.00	0.00	0.00
11,100.00	90.30	360.00	7,125.32	3,802.88	473.84	3,831.69	0.00	0.00	0.00
11,200.00	90.30	360.00	7,124.80	3,902.88	473.84	3,931.13	0.00	0.00	0.00
11,300.00	90.30	360.00	7,124.27	4,002.88	473.84	4,030.56	0.00	0.00	0.00
11,400.00	90.30	360.00	7,123.75	4,102.88	473.84	4,129.99	0.00	0.00	0.00
11,500.00	90.30	360.00	7,123.23	4,202.87	473.84	4,229.43	0.00	0.00	0.00
11,600.00	90.30	360.00	7,122.71	4,302.87	473.84	4,328.86	0.00	0.00	0.00
11,700.00	90.30	360.00	7,122.19	4,402.87	473.84	4,428.29	0.00	0.00	0.00
11,735.58	90.30	360.00	7,122.00	4,438.45	473.84	4,463.67	0.00	0.00	0.00
TD at 11735.58 - PBHL_WIRKNER-VANCE 29N-36HZ(460' FNL 1525' FWL)									

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well WIRKNER-VANCE 29N-36HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4822 & KB 17 @ 4839.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4822 & KB 17 @ 4839.00ft (Original Well Elev)
Site:	WIRKNER-VANCE 3C-36HZ PAD	North Reference:	True
Well:	WIRKNER-VANCE 29N-36HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL_WIRKNER-VANC - plan hits target center - Point	0.00	0.00	7,122.00	4,438.45	473.84	1,311,808.57	3,183,463.36	40.1874460	-104.8433220

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	
7,523.02	7,144.00	7" 626' FSL 1397' FWL	7.000	7.500	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
867.00	867.00	Fox Hills Base				
3,909.60	3,872.00	Parkman				
4,299.52	4,256.00	Sussex				
7,123.21	7,012.00	Sharon Springs				
7,266.91	7,089.00	Niobrara A				
7,330.67	7,113.00	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	
1,599.85	1,597.32	-25.84	34.99	Start 2892.28 hold at 1599.85 MD	
4,492.13	4,445.68	-324.16	438.85	Start Drop -2.00	
4,991.98	4,943.00	-350.00	473.84	Start 1628.05 hold at 4991.98 MD	
6,620.03	6,571.05	-350.00	473.84	Start DLS 10.00 TFO 360.00	
7,523.02	7,144.00	225.95	473.84	Start 4212.56 hold at 7523.02 MD	
11,735.58	7,122.00	4,438.45	473.84	TD at 11735.58	