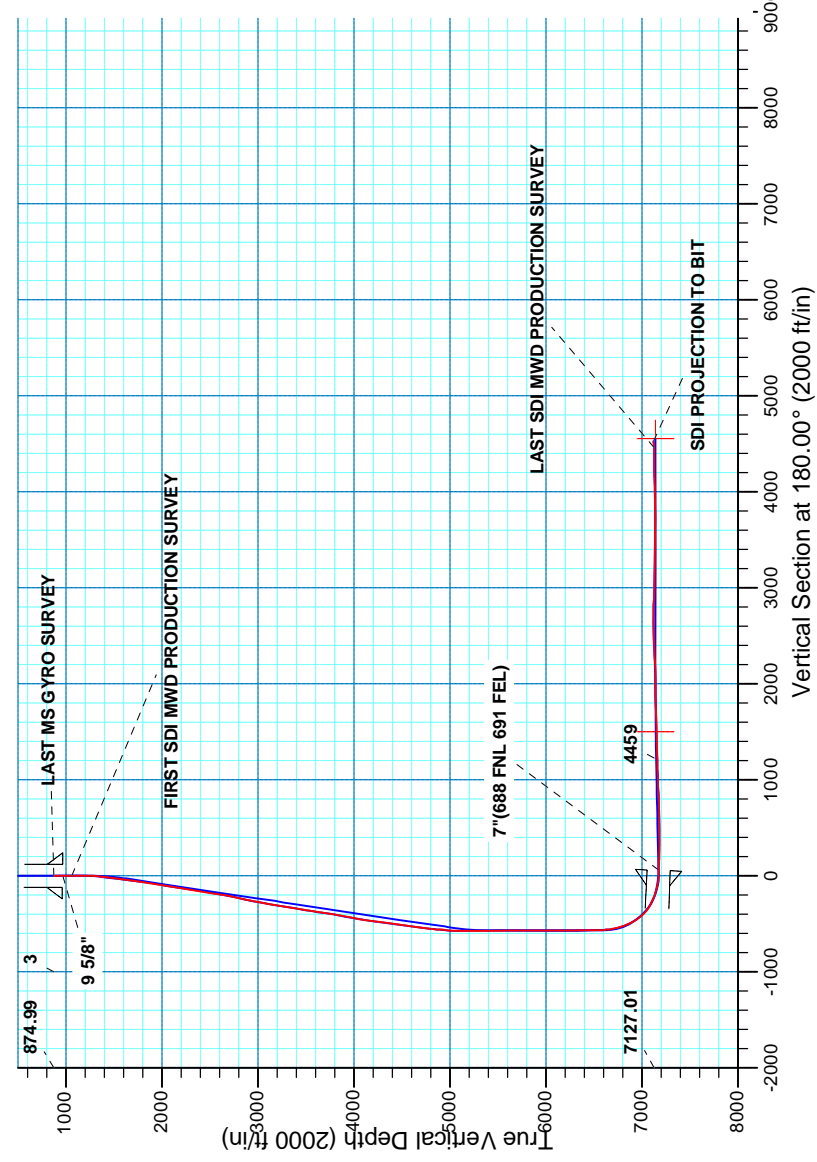
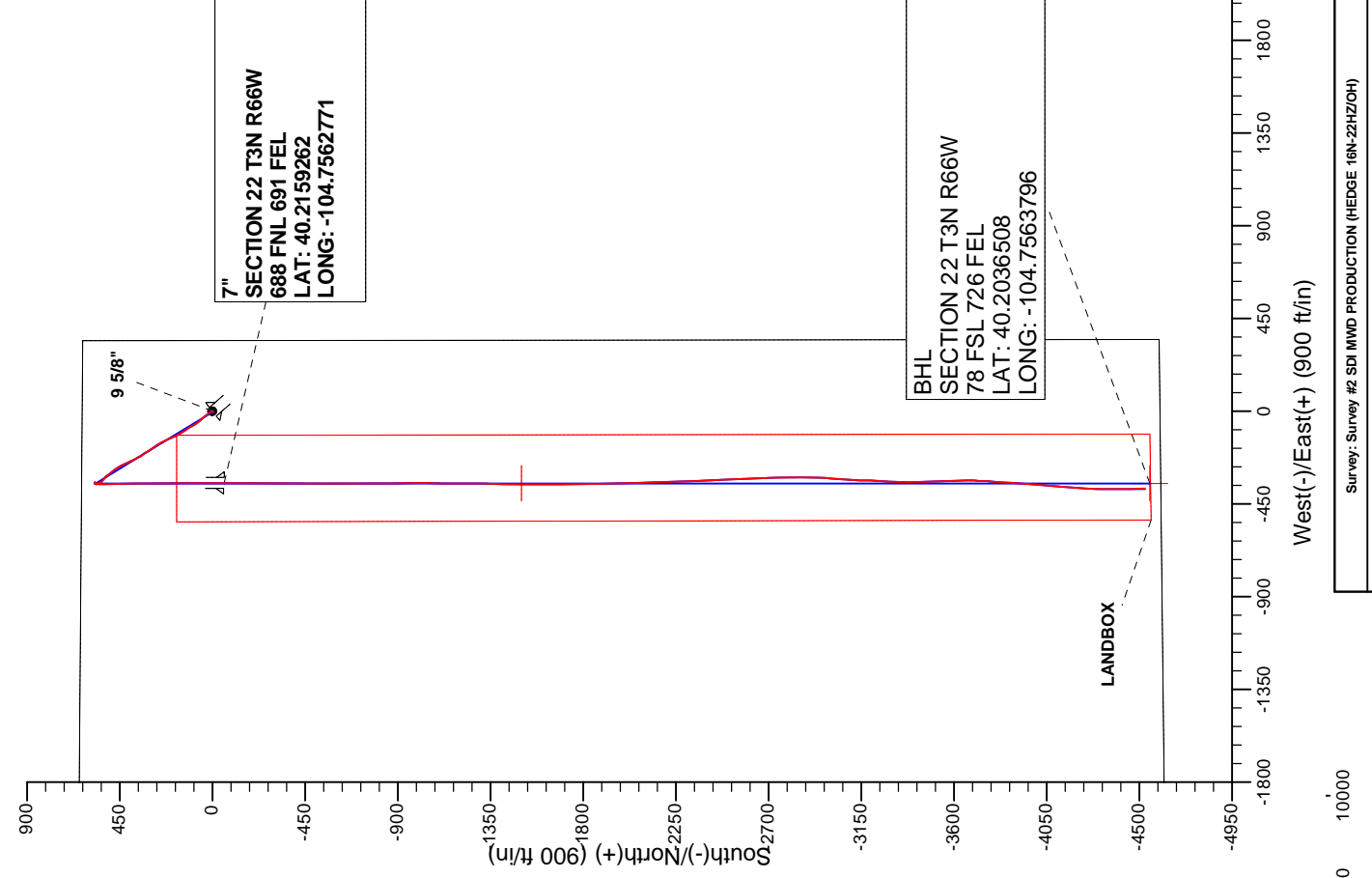


WELL DETAILS: HEDGE 16N-22HZ			
GL 4905 & KB 25 @ 4930.00ft (HP 311)			
+N/-S	+E/-W	Northing	Eastng
0.00	0.00	1322434.03	3208041.17
		Latitude	Longitude
		40.2160800	-104.7550340





**Scientific Drilling**

## **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**HEDGE 1-22HZ PAD**

**HEDGE 16N-22HZ**

**OH**

**Design: OH**

## **Standard Survey Report**

**27 August, 2013**

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well HEDGE 16N-22HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Site:</b>	HEDGE 1-22HZ PAD	<b>MD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Well:</b>	HEDGE 16N-22HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales Office

<b>Project</b>	COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

<b>Site</b>	HEDGE 1-22HZ PAD, NENE SECTION 22 T3N R66W				
<b>Site Position:</b>		<b>Northing:</b>	1,322,434.03 usft	<b>Latitude:</b>	40.2160800
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,208,041.18 usft	<b>Longitude:</b>	-104.7550340
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.48 °

<b>Well</b>	HEDGE 16N-22HZ, 631' FNL 344' FEL					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	1,322,434.03 usft	<b>Latitude:</b>	40.2160800
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	3,208,041.18 usft	<b>Longitude:</b>	-104.7550340
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	4,905.00 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2013	7/26/2013	8.59	66.82	52,744

<b>Design</b>	OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	180.00	

<b>Survey Program</b>	<b>Date</b>	8/27/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
25.00	875.00	Survey #1 MS GYRO (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,065.00	12,088.00	Survey #2 SDI MWD PRODUCTION (OH)	SDI_MWD+CRUST_1.0	SDI MWD + Crustal anomaly, Version 1.0	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125.00	0.14	208.31	125.00	-0.11	-0.06	0.11	0.14	0.14	0.14	0.00
<b>FIRST MS GYRO SURVEY</b>										
225.00	0.26	147.37	225.00	-0.41	0.01	0.41	0.23	0.12	0.12	-60.94
325.00	0.33	162.61	325.00	-0.87	0.21	0.87	0.10	0.07	0.07	15.24
425.00	0.41	195.18	425.00	-1.49	0.21	1.49	0.22	0.08	0.08	32.57
525.00	0.23	187.24	524.99	-2.04	0.09	2.04	0.18	-0.18	-0.18	-7.94
625.00	0.15	203.24	624.99	-2.36	0.01	2.36	0.10	-0.08	-0.08	16.00
725.00	0.20	254.34	724.99	-2.52	-0.21	2.52	0.16	0.05	0.05	51.10

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well HEDGE 16N-22HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Site:</b>	HEDGE 1-22HZ PAD	<b>MD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Well:</b>	HEDGE 16N-22HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales Office

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
825.00	0.21	203.55	824.99	-2.74	-0.45	2.74	0.18	0.01	-50.79	
875.00	0.05	306.08	874.99	-2.81	-0.50	2.81	0.45	-0.32	205.06	
<b>LAST MS GYRO SURVEY</b>										
968.00	0.14	320.60	967.99	-2.70	-0.61	2.70	0.10	0.10	15.61	
<b>9 5/8"</b>										
1,065.00	0.24	323.72	1,064.99	-2.44	-0.81	2.44	0.10	0.10	3.22	
<b>FIRST SDI MWD PRODUCTION SURVEY</b>										
1,157.00	0.21	339.15	1,156.99	-2.13	-0.98	2.13	0.07	-0.03	16.77	
1,248.00	3.46	342.58	1,247.93	0.65	-1.86	-0.65	3.57	3.57	3.77	
1,340.00	5.65	336.17	1,339.64	7.44	-4.52	-7.44	2.44	2.38	-6.97	
1,431.00	6.84	327.44	1,430.10	16.11	-9.25	-16.11	1.67	1.31	-9.59	
1,522.00	9.07	325.37	1,520.22	26.58	-16.24	-26.58	2.47	2.45	-2.27	
1,614.00	10.26	322.08	1,610.91	39.01	-25.40	-39.01	1.43	1.29	-3.58	
1,795.00	9.93	315.78	1,789.11	62.91	-46.19	-62.91	0.64	-0.18	-3.48	
1,887.00	10.66	327.29	1,879.64	75.76	-56.32	-75.76	2.37	0.79	12.51	
2,068.00	10.41	330.68	2,057.59	104.10	-73.38	-104.10	0.37	-0.14	1.87	
2,251.00	10.53	325.03	2,237.55	132.22	-91.06	-132.22	0.56	0.07	-3.09	
2,433.00	10.94	327.69	2,416.36	160.44	-109.82	-160.44	0.35	0.23	1.46	
2,524.00	12.03	334.62	2,505.55	176.31	-118.50	-176.31	1.93	1.20	7.62	
2,709.00	11.09	335.95	2,686.79	209.98	-134.02	-209.98	0.53	-0.51	0.72	
2,801.00	13.35	336.50	2,776.70	227.80	-141.86	-227.80	2.46	2.46	0.60	
2,892.00	13.22	331.89	2,865.27	246.61	-150.95	-246.61	1.17	-0.14	-5.07	
2,983.00	12.43	328.18	2,954.00	264.11	-161.02	-264.11	1.25	-0.87	-4.08	
3,076.00	12.01	323.84	3,044.89	280.43	-172.00	-280.43	1.09	-0.45	-4.67	
3,261.00	12.29	330.23	3,225.76	313.06	-193.14	-313.06	0.74	0.15	3.45	
3,355.00	10.07	326.60	3,317.97	328.61	-202.63	-328.61	2.48	-2.36	-3.86	
3,450.00	9.98	321.62	3,411.52	342.00	-212.31	-342.00	0.92	-0.09	-5.24	
3,544.00	11.44	328.51	3,503.88	356.33	-222.24	-356.33	2.06	1.55	7.33	
3,733.00	9.65	334.32	3,689.69	386.60	-238.90	-386.60	1.10	-0.95	3.07	
3,827.00	10.88	341.55	3,782.19	402.11	-245.12	-402.11	1.89	1.31	7.69	
4,016.00	10.66	333.23	3,967.87	434.64	-258.64	-434.64	0.83	-0.12	-4.40	
4,110.00	10.94	330.35	4,060.20	450.16	-266.97	-450.16	0.65	0.30	-3.06	
4,204.00	10.45	327.62	4,152.57	465.11	-275.95	-465.11	0.75	-0.52	-2.90	
4,393.00	8.48	319.53	4,339.00	490.19	-294.17	-490.19	1.26	-1.04	-4.28	
4,487.00	9.51	321.63	4,431.84	501.55	-303.49	-501.55	1.15	1.10	2.23	
4,581.00	11.64	314.76	4,524.24	514.32	-315.05	-514.32	2.63	2.27	-7.31	
4,676.00	10.38	310.84	4,617.49	526.66	-328.33	-526.66	1.54	-1.33	-4.13	
4,770.00	9.45	321.30	4,710.10	538.22	-339.56	-538.22	2.15	-0.99	11.13	
4,864.00	7.99	337.03	4,803.02	550.26	-346.94	-550.26	2.96	-1.55	16.73	
4,958.00	5.84	347.17	4,896.34	560.94	-350.55	-560.94	2.62	-2.29	10.79	
5,052.00	3.83	6.09	4,990.00	568.73	-351.28	-568.73	2.70	-2.14	20.13	
5,146.00	2.37	84.14	5,083.90	572.05	-349.01	-572.05	4.32	-1.55	83.03	
5,241.00	0.55	132.87	5,178.86	571.94	-346.72	-571.94	2.16	-1.92	51.29	
5,430.00	0.58	119.65	5,367.85	570.85	-345.22	-570.85	0.07	0.02	-6.99	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well HEDGE 16N-22HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Site:</b>	HEDGE 1-22HZ PAD	<b>MD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Well:</b>	HEDGE 16N-22HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales Office

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,713.00	0.75	69.77	5,650.84	570.78	-342.24	-570.78	0.21	0.06	-17.63	
5,902.00	0.83	222.46	5,839.83	570.20	-342.01	-570.20	0.81	0.04	80.79	
5,996.00	1.75	289.18	5,933.81	570.17	-343.82	-570.17	1.72	0.98	70.98	
6,091.00	1.05	292.42	6,028.78	570.98	-346.00	-570.98	0.74	-0.74	3.41	
6,186.00	0.87	281.66	6,123.77	571.46	-347.51	-571.46	0.27	-0.19	-11.33	
6,375.00	1.45	232.08	6,312.73	570.28	-350.80	-570.28	0.59	0.31	-26.23	
6,564.00	0.81	192.62	6,501.70	567.50	-352.98	-567.50	0.51	-0.34	-20.88	
6,595.00	0.90	196.32	6,532.69	567.05	-353.09	-567.05	0.34	0.29	11.94	
6,627.00	1.57	203.30	6,564.69	566.41	-353.34	-566.41	2.14	2.09	21.81	
6,658.00	3.37	172.19	6,595.66	565.12	-353.38	-565.12	7.04	5.81	-100.36	
6,690.00	5.76	175.48	6,627.55	562.59	-353.13	-562.59	7.51	7.47	10.28	
6,721.00	7.65	177.71	6,658.34	558.97	-352.92	-558.97	6.15	6.10	7.19	
6,753.00	10.21	179.92	6,689.95	554.01	-352.83	-554.01	8.07	8.00	6.91	
6,784.00	13.34	182.32	6,720.29	547.68	-352.97	-547.68	10.22	10.10	7.74	
6,815.00	15.03	184.91	6,750.35	540.11	-353.46	-540.11	5.82	5.45	8.35	
6,847.00	17.71	183.30	6,781.05	531.11	-354.10	-531.11	8.49	8.38	-5.03	
6,878.00	20.35	179.54	6,810.35	521.01	-354.33	-521.01	9.39	8.52	-12.13	
6,910.00	23.12	178.04	6,840.07	509.17	-354.07	-509.17	8.83	8.66	-4.69	
6,941.00	26.16	177.79	6,868.25	496.25	-353.59	-496.25	9.81	9.81	-0.81	
6,973.00	28.43	177.27	6,896.68	481.59	-352.96	-481.59	7.13	7.09	-1.63	
7,004.00	30.32	178.26	6,923.70	466.40	-352.37	-466.40	6.29	6.10	3.19	
7,036.00	33.92	178.63	6,950.79	449.39	-351.91	-449.39	11.27	11.25	1.16	
7,067.00	38.41	177.63	6,975.82	431.12	-351.31	-431.12	14.61	14.48	-3.23	
7,099.00	42.38	178.25	7,000.18	410.40	-350.57	-410.40	12.47	12.41	1.94	
7,130.00	45.05	178.86	7,022.59	388.98	-350.03	-388.98	8.72	8.61	1.97	
7,162.00	47.95	179.61	7,044.61	365.77	-349.72	-365.77	9.22	9.06	2.34	
7,193.00	52.78	180.27	7,064.38	341.91	-349.70	-341.91	15.67	15.58	2.13	
7,225.00	58.41	180.07	7,082.45	315.52	-349.78	-315.52	17.60	17.59	-0.63	
7,256.00	63.92	180.31	7,097.40	288.37	-349.87	-288.37	17.79	17.77	0.77	
7,288.00	66.88	180.05	7,110.72	259.28	-349.96	-259.28	9.28	9.25	-0.81	
7,319.00	68.94	179.84	7,122.38	230.56	-349.93	-230.56	6.67	6.65	-0.68	
7,351.00	71.12	179.07	7,133.30	200.48	-349.65	-200.48	7.18	6.81	-2.41	
7,382.00	74.21	179.47	7,142.54	170.90	-349.27	-170.90	10.04	9.97	1.29	
7,414.00	76.45	179.39	7,150.64	139.94	-348.96	-139.94	7.00	7.00	-0.25	
7,445.00	77.90	178.95	7,157.52	109.72	-348.52	-109.72	4.88	4.68	-1.42	
7,477.00	80.37	179.04	7,163.56	78.30	-347.97	-78.30	7.72	7.72	0.28	
7,508.00	82.26	179.25	7,168.24	47.66	-347.51	-47.66	6.13	6.10	0.68	
7,540.00	84.86	179.45	7,171.83	15.87	-347.15	-15.87	8.15	8.13	0.63	
7,563.00	87.02	180.14	7,173.45	-7.07	-347.07	7.07	9.86	9.39	3.00	
7,612.00	87.53	180.05	7,175.78	-56.02	-347.15	56.02	1.06	1.04	-0.18	
<b>7"(688 FNL 691 FEL)</b>										
7,733.00	88.79	179.84	7,179.67	-176.95	-347.04	176.95	1.06	1.04	-0.18	
7,827.00	89.53	181.31	7,181.05	-270.93	-347.99	270.93	1.75	0.79	1.56	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well HEDGE 16N-22HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Site:</b>	HEDGE 1-22HZ PAD	<b>MD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Well:</b>	HEDGE 16N-22HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales Office

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
7,921.00	89.46	180.40	7,181.88	-364.92	-349.39	364.92	0.97	-0.07	-0.97	
8,016.00	89.97	180.62	7,182.35	-459.91	-350.23	459.91	0.58	0.54	0.23	
8,110.00	91.94	180.02	7,180.78	-553.89	-350.76	553.89	2.19	2.10	-0.64	
8,204.00	91.88	180.30	7,177.65	-647.84	-351.02	647.84	0.30	-0.06	0.30	
8,299.00	91.75	179.68	7,174.64	-742.79	-351.00	742.79	0.67	-0.14	-0.65	
8,393.00	90.70	179.02	7,172.63	-836.76	-349.94	836.76	1.32	-1.12	-0.70	
8,487.00	92.06	179.13	7,170.37	-930.72	-348.42	930.72	1.45	1.45	0.12	
8,582.00	91.88	180.58	7,167.10	-1,025.66	-348.18	1,025.66	1.54	-0.19	1.53	
8,676.00	91.48	180.65	7,164.34	-1,119.62	-349.19	1,119.62	0.43	-0.43	0.07	
8,770.00	92.12	181.16	7,161.39	-1,213.56	-350.67	1,213.56	0.87	0.68	0.54	
8,864.00	92.12	179.91	7,157.91	-1,307.49	-351.55	1,307.49	1.33	0.00	-1.33	
8,959.00	91.34	180.82	7,155.05	-1,402.44	-352.16	1,402.44	1.26	-0.82	0.96	
9,053.00	92.09	180.01	7,152.23	-1,496.39	-352.84	1,496.39	1.17	0.80	-0.86	
9,147.00	91.75	180.15	7,149.08	-1,590.34	-352.97	1,590.34	0.39	-0.36	0.15	
9,241.00	90.80	180.22	7,146.99	-1,684.32	-353.27	1,684.32	1.01	-1.01	0.07	
9,335.00	91.88	179.50	7,144.79	-1,778.29	-353.04	1,778.29	1.38	1.15	-0.77	
9,430.00	90.77	178.98	7,142.60	-1,873.25	-351.78	1,873.25	1.29	-1.17	-0.55	
9,523.00	89.13	177.52	7,142.68	-1,966.20	-348.94	1,966.20	2.36	-1.76	-1.57	
9,617.00	92.08	179.17	7,141.69	-2,060.14	-346.23	2,060.14	3.60	3.14	1.76	
9,711.00	92.08	177.81	7,138.27	-2,154.05	-343.75	2,154.05	1.45	0.00	-1.45	
9,806.00	93.23	178.62	7,133.87	-2,248.90	-340.80	2,248.90	1.48	1.21	0.85	
9,900.00	92.79	178.42	7,128.94	-2,342.74	-338.37	2,342.74	0.51	-0.47	-0.21	
9,995.00	92.18	176.42	7,124.82	-2,437.55	-334.10	2,437.55	2.20	-0.64	-2.11	
10,089.00	90.27	177.17	7,122.81	-2,531.37	-328.84	2,531.37	2.18	-2.03	0.80	
10,184.00	89.56	177.58	7,122.95	-2,626.27	-324.49	2,626.27	0.86	-0.75	0.43	
10,278.00	89.60	178.95	7,123.64	-2,720.22	-321.65	2,720.22	1.46	0.04	1.46	
10,372.00	88.39	179.99	7,125.29	-2,814.20	-320.78	2,814.20	1.70	-1.29	1.11	
10,467.00	89.26	180.53	7,127.24	-2,909.18	-321.21	2,909.18	1.08	0.92	0.57	
10,561.00	89.16	184.10	7,128.53	-3,003.08	-325.01	3,003.08	3.80	-0.11	3.80	
10,656.00	88.69	183.65	7,130.31	-3,097.84	-331.42	3,097.84	0.68	-0.49	-0.47	
10,751.00	89.06	182.63	7,132.18	-3,192.68	-336.63	3,192.68	1.14	0.39	-1.07	
10,846.00	89.29	182.03	7,133.55	-3,287.59	-340.49	3,287.59	0.68	0.24	-0.63	
10,940.00	89.43	181.21	7,134.60	-3,381.55	-343.15	3,381.55	0.88	0.15	-0.87	
11,034.00	89.80	177.15	7,135.23	-3,475.52	-341.80	3,475.52	4.34	0.39	-4.32	
11,129.00	88.75	177.67	7,136.43	-3,570.41	-337.51	3,570.41	1.23	-1.11	0.55	
11,223.00	88.19	180.73	7,138.94	-3,664.36	-336.20	3,664.36	3.31	-0.60	3.26	
11,317.00	90.34	182.43	7,140.15	-3,758.30	-338.79	3,758.30	2.92	2.29	1.81	
11,412.00	91.31	184.18	7,138.78	-3,853.13	-344.26	3,853.13	2.11	1.02	1.84	
11,506.00	91.81	183.61	7,136.22	-3,946.88	-350.65	3,946.88	0.81	0.53	-0.61	
11,601.00	90.64	184.85	7,134.19	-4,041.60	-357.65	4,041.60	1.79	-1.23	1.31	
11,695.00	90.80	184.72	7,133.01	-4,135.26	-365.49	4,135.26	0.22	0.17	-0.14	
11,789.00	91.01	184.19	7,131.52	-4,228.96	-372.79	4,228.96	0.61	0.22	-0.56	
11,884.00	91.31	181.10	7,129.60	-4,323.83	-377.18	4,323.83	3.27	0.32	-3.25	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well HEDGE 16N-22HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Site:</b>	HEDGE 1-22HZ PAD	<b>MD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Well:</b>	HEDGE 16N-22HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales Office

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,979.00	90.94	179.56	7,127.73	-4,418.81	-377.72	4,418.81	1.67	-0.39	-1.62
12,019.00	91.14	178.89	7,127.01	-4,458.80	-377.18	4,458.80	1.75	0.50	-1.68
<b>LAST SDI MWD PRODUCTION SURVEY</b>									
12,088.00	91.14	178.89	7,125.64	-4,527.77	-375.85	4,527.77	0.00	0.00	0.00
<b>SDI PROJECTION TO BIT</b>									

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL_HEDGE 16N-22H	0.00	0.00	7,140.00	-4,552.83	-300.13	1,317,878.86	3,207,779.31	40.2035820	-104.7561085
- hit/miss target									
- Shape									
- actual wellpath misses target center by 81.04ft at 12088.00ft MD (7125.64 TVD, -4527.77 N, -375.85 E)									
- Point									

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
968.00	967.99	9 5/8"	9.625	12.250
7,612.00	7,175.78	7"(688 FNL 691 FEL)	7.000	7.500

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
125.00	125.00	-0.11	-0.06	FIRST MS GYRO SURVEY
875.00	874.99	-2.81	-0.50	LAST MS GYRO SURVEY
1,065.00	1,064.99	-2.44	-0.81	FIRST SDI MWD PRODUCTION SURVEY
12,019.00	7,127.01	-4,458.80	-377.18	LAST SDI MWD PRODUCTION SURVEY
12,088.00	7,125.64	-4,527.77	-375.85	SDI PROJECTION TO BIT

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_



**Scientific Drilling**

# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**HEDGE 1-22HZ PAD**

**HEDGE 16N-22HZ**

**OH**

**Design: OH**

## **Survey Report - Geographic**

**27 August, 2013**

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well HEDGE 16N-22HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Site:</b>	HEDGE 1-22HZ PAD	<b>MD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Well:</b>	HEDGE 16N-22HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales Office

<b>Project</b>	COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

<b>Site</b>	HEDGE 1-22HZ PAD, NENE SECTION 22 T3N R66W				
<b>Site Position:</b>		<b>Northing:</b>	1,322,434.03 usft	<b>Latitude:</b>	40.2160800
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,208,041.18 usft	<b>Longitude:</b>	-104.7550340
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.48 °

<b>Well</b>	HEDGE 16N-22HZ, 631' FNL 344' FEL					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	1,322,434.03 usft	<b>Latitude:</b>	40.2160800
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	3,208,041.18 usft	<b>Longitude:</b>	-104.7550340
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	4,905.00 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2013	7/26/2013	8.59	66.82	52,744

<b>Design</b>	OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	180.00	

<b>Survey Program</b>	<b>Date</b>	8/27/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
25.00	875.00	Survey #1 MS GYRO (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,065.00	12,088.00	Survey #2 SDI MWD PRODUCTION (OH)	SDI_MWD+CRUST_1.0	SDI MWD + Crustal anomaly, Version 1.0	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>	
0.00	0.00	0.00	0.00	0.00	0.00	1,322,434.03	3,208,041.18	40.2160800	-104.7550340	
25.00	0.00	0.00	25.00	0.00	0.00	1,322,434.03	3,208,041.18	40.2160800	-104.7550340	
125.00	0.14	208.31	125.00	-0.11	-0.06	1,322,433.93	3,208,041.12	40.2160797	-104.7550342	
<b>FIRST MS GYRO SURVEY</b>										
225.00	0.26	147.37	225.00	-0.41	0.01	1,322,433.63	3,208,041.19	40.2160789	-104.7550340	
325.00	0.33	162.61	325.00	-0.87	0.21	1,322,433.16	3,208,041.40	40.2160776	-104.7550332	
425.00	0.41	195.18	425.00	-1.49	0.21	1,322,432.54	3,208,041.40	40.2160759	-104.7550332	
525.00	0.23	187.24	524.99	-2.04	0.09	1,322,432.00	3,208,041.28	40.2160744	-104.7550337	
625.00	0.15	203.24	624.99	-2.36	0.01	1,322,431.68	3,208,041.21	40.2160736	-104.7550339	
725.00	0.20	254.34	724.99	-2.52	-0.21	1,322,431.51	3,208,040.99	40.2160731	-104.7550347	
825.00	0.21	203.55	824.99	-2.74	-0.45	1,322,431.29	3,208,040.75	40.2160725	-104.7550356	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well HEDGE 16N-22HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Site:</b>	HEDGE 1-22HZ PAD	<b>MD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Well:</b>	HEDGE 16N-22HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales Office

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
875.00	0.05	306.08	874.99	-2.81	-0.50	1,322,431.22	3,208,040.70	40.2160723	-104.7550358	
<b>LAST MS GYRO SURVEY</b>										
968.00	0.14	320.60	967.99	-2.70	-0.61	1,322,431.33	3,208,040.59	40.2160726	-104.7550362	
<b>9 5/8"</b>										
1,065.00	0.24	323.72	1,064.99	-2.44	-0.81	1,322,431.59	3,208,040.39	40.2160733	-104.7550369	
<b>FIRST SDI MWD PRODUCTION SURVEY</b>										
1,157.00	0.21	339.15	1,156.99	-2.13	-0.98	1,322,431.90	3,208,040.21	40.2160742	-104.7550375	
1,248.00	3.46	342.58	1,247.93	0.65	-1.86	1,322,434.67	3,208,039.31	40.2160818	-104.7550406	
1,340.00	5.65	336.17	1,339.64	7.44	-4.52	1,322,441.44	3,208,036.59	40.2161004	-104.7550502	
1,431.00	6.84	327.44	1,430.10	16.11	-9.25	1,322,450.06	3,208,031.79	40.2161242	-104.7550671	
1,522.00	9.07	325.37	1,520.22	26.58	-16.24	1,322,460.47	3,208,024.71	40.2161530	-104.7550921	
1,614.00	10.26	322.08	1,610.91	39.01	-25.40	1,322,472.83	3,208,015.45	40.2161871	-104.7551249	
1,795.00	9.93	315.78	1,789.11	62.91	-46.19	1,322,496.55	3,207,994.46	40.2162527	-104.7551994	
1,887.00	10.66	327.29	1,879.64	75.76	-56.32	1,322,509.31	3,207,984.22	40.2162880	-104.7552357	
2,068.00	10.41	330.68	2,057.59	104.10	-73.38	1,322,537.51	3,207,966.93	40.2163658	-104.7552967	
2,251.00	10.53	325.03	2,237.55	132.22	-91.06	1,322,565.48	3,207,949.01	40.2164430	-104.7553600	
2,433.00	10.94	327.69	2,416.36	160.44	-109.82	1,322,593.55	3,207,930.01	40.2165205	-104.7554272	
2,524.00	12.03	334.62	2,505.55	176.31	-118.50	1,322,609.34	3,207,921.20	40.2165640	-104.7554583	
2,709.00	11.09	335.95	2,686.79	209.98	-134.02	1,322,642.88	3,207,905.40	40.2166564	-104.7555139	
2,801.00	13.35	336.50	2,776.70	227.80	-141.86	1,322,660.63	3,207,897.41	40.2167054	-104.7555419	
2,892.00	13.22	331.89	2,865.27	246.61	-150.95	1,322,679.37	3,207,888.16	40.2167570	-104.7555745	
2,983.00	12.43	328.18	2,954.00	264.11	-161.02	1,322,696.78	3,207,877.95	40.2168050	-104.7556106	
3,076.00	12.01	323.84	3,044.89	280.43	-172.00	1,322,713.01	3,207,866.82	40.2168498	-104.7556499	
3,261.00	12.29	330.23	3,225.76	313.06	-193.14	1,322,745.46	3,207,845.42	40.2169394	-104.7557256	
3,355.00	10.07	326.60	3,317.97	328.61	-202.63	1,322,760.93	3,207,835.79	40.2169821	-104.7557596	
3,450.00	9.98	321.62	3,411.52	342.00	-212.31	1,322,774.23	3,207,826.00	40.2170188	-104.7557942	
3,544.00	11.44	328.51	3,503.88	356.33	-222.24	1,322,788.49	3,207,815.95	40.2170582	-104.7558298	
3,733.00	9.65	334.32	3,689.69	386.60	-238.90	1,322,818.61	3,207,799.04	40.2171413	-104.7558894	
3,827.00	10.88	341.55	3,782.19	402.11	-245.12	1,322,834.07	3,207,792.69	40.2171839	-104.7559117	
4,016.00	10.66	333.23	3,967.87	434.64	-258.64	1,322,866.49	3,207,778.90	40.2172732	-104.7559601	
4,110.00	10.94	330.35	4,060.20	450.16	-266.97	1,322,881.93	3,207,770.44	40.2173157	-104.7559900	
4,204.00	10.45	327.62	4,152.57	465.11	-275.95	1,322,896.81	3,207,761.33	40.2173568	-104.7560221	
4,393.00	8.48	319.53	4,339.00	490.19	-294.17	1,322,921.73	3,207,742.90	40.2174256	-104.7560874	
4,487.00	9.51	321.63	4,431.84	501.55	-303.49	1,322,933.01	3,207,733.48	40.2174568	-104.7561207	
4,581.00	11.64	314.76	4,524.24	514.32	-315.05	1,322,945.68	3,207,721.82	40.2174919	-104.7561621	
4,676.00	10.38	310.84	4,617.49	526.66	-328.33	1,322,957.92	3,207,708.44	40.2175258	-104.7562097	
4,770.00	9.45	321.30	4,710.10	538.22	-339.56	1,322,969.38	3,207,697.11	40.2175575	-104.7562499	
4,864.00	7.99	337.03	4,803.02	550.26	-346.94	1,322,981.36	3,207,689.63	40.2175905	-104.7562763	
4,958.00	5.84	347.17	4,896.34	560.94	-350.55	1,322,992.01	3,207,685.93	40.2176199	-104.7562892	
5,052.00	3.83	6.09	4,990.00	568.73	-351.28	1,322,999.79	3,207,685.14	40.2176412	-104.7562919	
5,146.00	2.37	84.14	5,083.90	572.05	-349.01	1,323,003.13	3,207,687.37	40.2176503	-104.7562837	
5,241.00	0.55	132.87	5,178.86	571.94	-346.72	1,323,003.04	3,207,689.66	40.2176500	-104.7562755	
5,430.00	0.58	119.65	5,367.85	570.85	-345.22	1,323,001.96	3,207,691.17	40.2176471	-104.7562702	
5,713.00	0.75	69.77	5,650.84	570.78	-342.24	1,323,001.92	3,207,694.15	40.2176469	-104.7562595	
5,902.00	0.83	222.46	5,839.83	570.20	-342.01	1,323,001.34	3,207,694.39	40.2176453	-104.7562587	
5,996.00	1.75	289.18	5,933.81	570.17	-343.82	1,323,001.29	3,207,692.58	40.2176452	-104.7562652	
6,091.00	1.05	292.42	6,028.78	570.98	-346.00	1,323,002.08	3,207,690.40	40.2176474	-104.7562729	
6,186.00	0.87	281.66	6,123.77	571.46	-347.51	1,323,002.55	3,207,688.88	40.2176487	-104.7562784	
6,375.00	1.45	232.08	6,312.73	570.28	-350.80	1,323,001.34	3,207,685.60	40.2176455	-104.7562901	
6,564.00	0.81	192.62	6,501.70	567.50	-352.98	1,322,998.55	3,207,683.45	40.2176379	-104.7562979	
6,595.00	0.90	196.32	6,532.69	567.05	-353.09	1,322,998.10	3,207,683.33	40.2176366	-104.7562984	
6,627.00	1.57	203.30	6,564.69	566.41	-353.34	1,322,997.45	3,207,683.09	40.2176349	-104.7562992	
6,658.00	3.37	172.19	6,595.66	565.12	-353.38	1,322,996.16	3,207,683.06	40.2176313	-104.7562994	
6,690.00	5.76	175.48	6,627.55	562.59	-353.13	1,322,993.63	3,207,683.34	40.2176244	-104.7562985	
6,721.00	7.65	177.71	6,658.34	558.97	-352.92	1,322,990.02	3,207,683.57	40.2176144	-104.7562977	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well HEDGE 16N-22HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Site:</b>	HEDGE 1-22HZ PAD	<b>MD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Well:</b>	HEDGE 16N-22HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales Office

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
6,753.00	10.21	179.92	6,689.95	554.01	-352.83	1,322,985.06	3,207,683.70	40.2176008	-104.7562974	
6,784.00	13.34	182.32	6,720.29	547.68	-352.97	1,322,978.73	3,207,683.62	40.2175835	-104.7562979	
6,815.00	15.03	184.91	6,750.35	540.11	-353.46	1,322,971.15	3,207,683.19	40.2175627	-104.7562997	
6,847.00	17.71	183.30	6,781.05	531.11	-354.10	1,322,962.15	3,207,682.63	40.2175380	-104.7563020	
6,878.00	20.35	179.54	6,810.35	521.01	-354.33	1,322,952.05	3,207,682.49	40.2175102	-104.7563028	
6,910.00	23.12	178.04	6,840.07	509.17	-354.07	1,322,940.21	3,207,682.85	40.2174777	-104.7563018	
6,941.00	26.16	177.79	6,868.25	496.25	-353.59	1,322,927.30	3,207,683.43	40.2174423	-104.7563002	
6,973.00	28.43	177.27	6,896.68	481.59	-352.96	1,322,912.64	3,207,684.18	40.2174020	-104.7562979	
7,004.00	30.32	178.26	6,923.70	466.40	-352.37	1,322,897.45	3,207,684.90	40.2173603	-104.7562958	
7,036.00	33.92	178.63	6,950.79	449.39	-351.91	1,322,880.45	3,207,685.50	40.2173136	-104.7562941	
7,067.00	38.41	177.63	6,975.82	431.12	-351.31	1,322,862.18	3,207,686.26	40.2172635	-104.7562920	
7,099.00	42.38	178.25	7,000.18	410.40	-350.57	1,322,841.47	3,207,687.18	40.2172066	-104.7562893	
7,130.00	45.05	178.86	7,022.59	388.98	-350.03	1,322,820.06	3,207,687.89	40.2171478	-104.7562874	
7,162.00	47.95	179.61	7,044.61	365.77	-349.72	1,322,796.86	3,207,688.39	40.2170841	-104.7562863	
7,193.00	52.78	180.27	7,064.38	341.91	-349.70	1,322,772.99	3,207,688.62	40.2170186	-104.7562862	
7,225.00	58.41	180.07	7,082.45	315.52	-349.78	1,322,746.60	3,207,688.76	40.2169461	-104.7562865	
7,256.00	63.92	180.31	7,097.40	288.37	-349.87	1,322,719.45	3,207,688.90	40.2168716	-104.7562868	
7,288.00	66.88	180.05	7,110.72	259.28	-349.96	1,322,690.36	3,207,689.05	40.2167918	-104.7562871	
7,319.00	68.94	179.84	7,122.38	230.56	-349.93	1,322,661.64	3,207,689.32	40.2167129	-104.7562870	
7,351.00	71.12	179.07	7,133.30	200.48	-349.65	1,322,631.57	3,207,689.86	40.2166304	-104.7562860	
7,382.00	74.21	179.47	7,142.54	170.90	-349.27	1,322,601.99	3,207,690.48	40.2165491	-104.7562846	
7,414.00	76.45	179.39	7,150.64	139.94	-348.96	1,322,571.04	3,207,691.05	40.2164642	-104.7562835	
7,445.00	77.90	178.95	7,157.52	109.72	-348.52	1,322,540.82	3,207,691.75	40.2163812	-104.7562820	
7,477.00	80.37	179.04	7,163.56	78.30	-347.97	1,322,509.41	3,207,692.56	40.2162950	-104.7562800	
7,508.00	82.26	179.25	7,168.24	47.66	-347.51	1,322,478.77	3,207,693.27	40.2162109	-104.7562784	
7,540.00	84.86	179.45	7,171.83	15.87	-347.15	1,322,446.99	3,207,693.90	40.2161236	-104.7562771	
7,563.00	87.02	180.14	7,173.45	-7.07	-347.07	1,322,424.05	3,207,694.18	40.2160606	-104.7562768	
7,612.00	87.53	180.05	7,175.78	-56.02	-347.15	1,322,375.10	3,207,694.51	40.2159262	-104.7562771	
<b>7"(688 FNL 691 FEL)</b>										
7,733.00	88.79	179.84	7,179.67	-176.95	-347.04	1,322,254.17	3,207,695.63	40.2155943	-104.7562767	
7,827.00	89.53	181.31	7,181.05	-270.93	-347.99	1,322,160.19	3,207,695.48	40.2153363	-104.7562800	
7,921.00	89.46	180.40	7,181.88	-364.92	-349.39	1,322,066.19	3,207,694.87	40.2150783	-104.7562850	
8,016.00	89.97	180.62	7,182.35	-459.91	-350.23	1,321,971.20	3,207,694.82	40.2148175	-104.7562881	
8,110.00	91.94	180.02	7,180.78	-553.89	-350.76	1,321,877.21	3,207,695.08	40.2145595	-104.7562899	
8,204.00	91.88	180.30	7,177.65	-647.84	-351.02	1,321,783.27	3,207,695.61	40.2143016	-104.7562909	
8,299.00	91.75	179.68	7,174.64	-742.79	-351.00	1,321,688.32	3,207,696.43	40.2140410	-104.7562908	
8,393.00	90.70	179.02	7,172.63	-836.76	-349.94	1,321,594.36	3,207,698.28	40.2137830	-104.7562870	
8,487.00	92.06	179.13	7,170.37	-930.72	-348.42	1,321,500.42	3,207,700.59	40.2135251	-104.7562816	
8,582.00	91.88	180.58	7,167.10	-1,025.66	-348.18	1,321,405.48	3,207,701.63	40.2132645	-104.7562807	
8,676.00	91.48	180.65	7,164.34	-1,119.62	-349.19	1,321,311.53	3,207,701.41	40.2130065	-104.7562843	
8,770.00	92.12	181.16	7,161.39	-1,213.56	-350.67	1,321,217.58	3,207,700.71	40.2127487	-104.7562896	
8,864.00	92.12	179.91	7,157.91	-1,307.49	-351.55	1,321,123.64	3,207,700.62	40.2124908	-104.7562927	
8,959.00	91.34	180.82	7,155.05	-1,402.44	-352.16	1,321,028.69	3,207,700.82	40.2122302	-104.7562949	
9,053.00	92.09	180.01	7,152.23	-1,496.39	-352.84	1,320,934.73	3,207,700.92	40.2119723	-104.7562973	
9,147.00	91.75	180.15	7,149.08	-1,590.34	-352.97	1,320,840.79	3,207,701.58	40.2117144	-104.7562978	
9,241.00	90.80	180.22	7,146.99	-1,684.32	-353.27	1,320,746.81	3,207,702.07	40.2114564	-104.7562989	
9,335.00	91.88	179.50	7,144.79	-1,778.29	-353.04	1,320,652.85	3,207,703.09	40.2111984	-104.7562981	
9,430.00	90.77	178.98	7,142.60	-1,873.25	-351.78	1,320,557.90	3,207,705.15	40.2109377	-104.7562935	
9,523.00	89.13	177.52	7,142.68	-1,966.20	-348.94	1,320,464.97	3,207,708.77	40.2106826	-104.7562834	
9,617.00	92.08	179.17	7,141.69	-2,060.14	-346.23	1,320,371.06	3,207,712.27	40.2104247	-104.7562736	
9,711.00	92.08	177.81	7,138.27	-2,154.05	-343.75	1,320,277.18	3,207,715.53	40.2101669	-104.7562648	
9,806.00	93.23	178.62	7,133.87	-2,248.90	-340.80	1,320,182.36	3,207,719.29	40.2099065	-104.7562542	
9,900.00	92.79	178.42	7,128.94	-2,342.74	-338.37	1,320,088.54	3,207,722.50	40.2096490	-104.7562455	
9,995.00	92.18	176.42	7,124.82	-2,437.55	-334.10	1,319,993.77	3,207,727.57	40.2093887	-104.7562302	
10,089.00	90.27	177.17	7,122.81	-2,531.37	-328.84	1,319,899.99	3,207,733.61	40.2091311	-104.7562114	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well HEDGE 16N-22HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Site:</b>	HEDGE 1-22HZ PAD	<b>MD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Well:</b>	HEDGE 16N-22HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales Office

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,184.00	89.56	177.58	7,122.95	-2,626.27	-324.49	1,319,805.13	3,207,738.76	40.2088706	-104.7561958
10,278.00	89.60	178.95	7,123.64	-2,720.22	-321.65	1,319,711.21	3,207,742.39	40.2086127	-104.7561856
10,372.00	88.39	179.99	7,125.29	-2,814.20	-320.78	1,319,617.24	3,207,744.05	40.2083547	-104.7561825
10,467.00	89.26	180.53	7,127.24	-2,909.18	-321.21	1,319,522.26	3,207,744.42	40.2080940	-104.7561840
10,561.00	89.16	184.10	7,128.53	-3,003.08	-325.01	1,319,428.34	3,207,741.41	40.2078362	-104.7561976
10,656.00	88.69	183.65	7,130.31	-3,097.84	-331.42	1,319,333.52	3,207,735.79	40.2075761	-104.7562206
10,751.00	89.06	182.63	7,132.18	-3,192.68	-336.63	1,319,238.64	3,207,731.38	40.2073158	-104.7562392
10,846.00	89.29	182.03	7,133.55	-3,287.59	-340.49	1,319,143.70	3,207,728.32	40.2070552	-104.7562530
10,940.00	89.43	181.21	7,134.60	-3,381.55	-343.15	1,319,049.73	3,207,726.45	40.2067973	-104.7562625
11,034.00	89.80	177.15	7,135.23	-3,475.52	-341.80	1,318,955.77	3,207,728.59	40.2065393	-104.7562577
11,129.00	88.75	177.67	7,136.43	-3,570.41	-337.51	1,318,860.92	3,207,733.68	40.2062789	-104.7562424
11,223.00	88.19	180.73	7,138.94	-3,664.36	-336.20	1,318,766.99	3,207,735.78	40.2060210	-104.7562377
11,317.00	90.34	182.43	7,140.15	-3,758.30	-338.79	1,318,673.02	3,207,733.97	40.2057631	-104.7562469
11,412.00	91.31	184.18	7,138.78	-3,853.13	-344.26	1,318,578.15	3,207,729.30	40.2055028	-104.7562665
11,506.00	91.81	183.61	7,136.22	-3,946.88	-350.65	1,318,484.36	3,207,723.70	40.2052454	-104.7562894
11,601.00	90.64	184.85	7,134.19	-4,041.60	-357.65	1,318,389.58	3,207,717.49	40.2049854	-104.7563145
11,695.00	90.80	184.72	7,133.01	-4,135.26	-365.49	1,318,295.86	3,207,710.44	40.2047283	-104.7563425
11,789.00	91.01	184.19	7,131.52	-4,228.96	-372.79	1,318,202.09	3,207,703.92	40.2044711	-104.7563687
11,884.00	91.31	181.10	7,129.60	-4,323.83	-377.18	1,318,107.19	3,207,700.34	40.2042106	-104.7563843
11,979.00	90.94	179.56	7,127.73	-4,418.81	-377.72	1,318,012.22	3,207,700.59	40.2039499	-104.7563863
12,019.00	91.14	178.89	7,127.01	-4,458.80	-377.18	1,317,972.23	3,207,701.47	40.2038401	-104.7563844
<b>LAST SDI MWD PRODUCTION SURVEY</b>									
12,088.00	91.14	178.89	7,125.64	-4,527.77	-375.85	1,317,903.27	3,207,703.38	40.2036508	-104.7563796
<b>SDI PROJECTION TO BIT</b>									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL_HEDGE 16N-22H	0.00	0.00	7,140.00	-4,552.83	-300.13	1,317,878.86	3,207,779.31	40.2035820	-104.7561085
- hit/miss target									
- Shape									
- actual wellpath misses target center by 81.04ft at 12088.00ft MD (7125.64 TVD, -4527.77 N, -375.85 E)									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
968.00	967.99	9 5/8"	9.625	12.250	
7,612.00	7,175.78	7"(688 FNL 691 FEL)	7.000	7.500	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well HEDGE 16N-22HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Site:</b>	HEDGE 1-22HZ PAD	<b>MD Reference:</b>	GL 4905 & KB 25 @ 4930.00ft (HP 311)
<b>Well:</b>	HEDGE 16N-22HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales Office

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
125.00	125.00	-0.11	-0.06	FIRST MS GYRO SURVEY
875.00	874.99	-2.81	-0.50	LAST MS GYRO SURVEY
1,065.00	1,064.99	-2.44	-0.81	FIRST SDI MWD PRODUCTION SURVEY
12,019.00	7,127.01	-4,458.80	-377.18	LAST SDI MWD PRODUCTION SURVEY
12,088.00	7,125.64	-4,527.77	-375.85	SDI PROJECTION TO BIT

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_