

WELL DETAILS: Yellowhammer 4C-8HZ

GL 5063' & KB 17' @ 5080.00ft (Xtreme 24) 5063.00
 Northing Easting Latitude Longitude
 14549548.23 1630522.56 40.0626480 -105.0353620

Design: OH (Yellowhammer 4C-8HZ/OH)

Created By: Seth Burstad Date: 12-06-2017

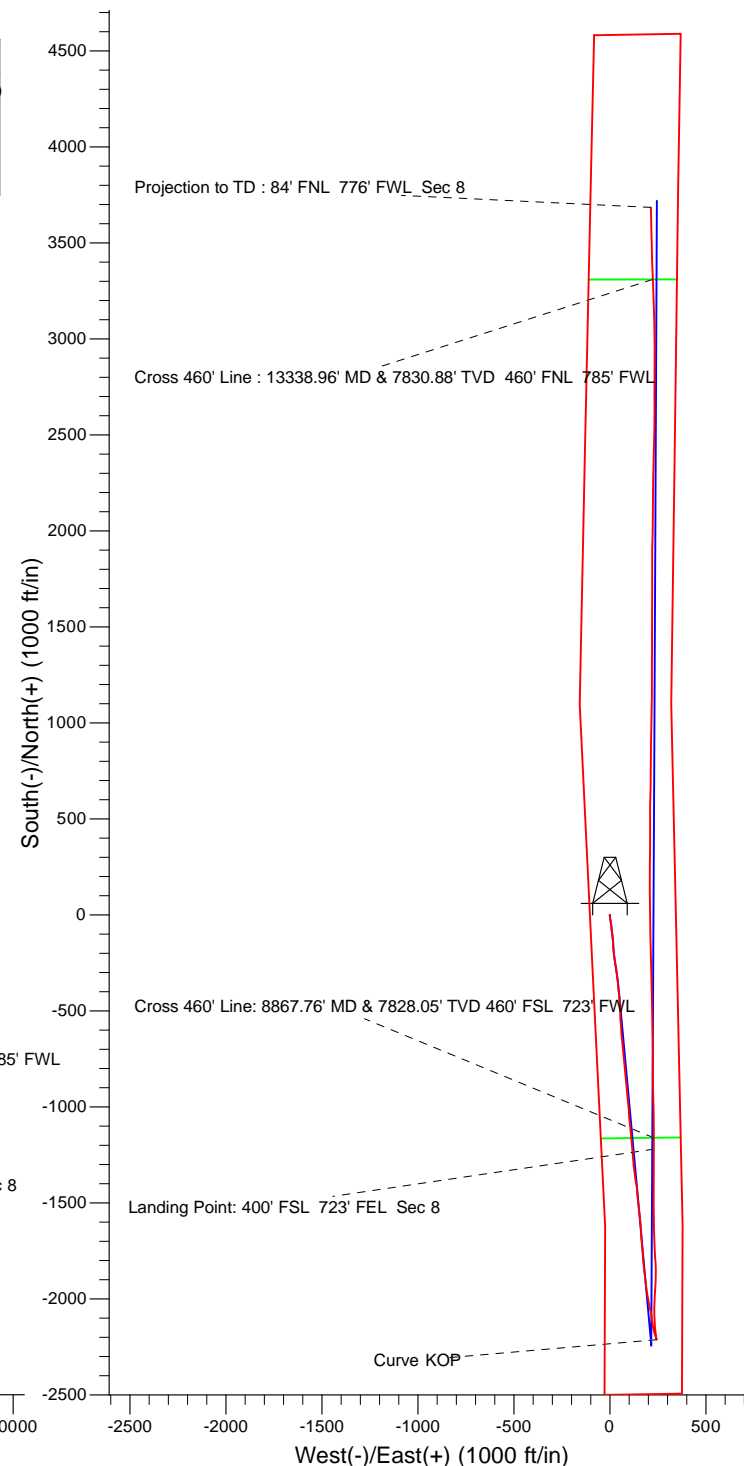
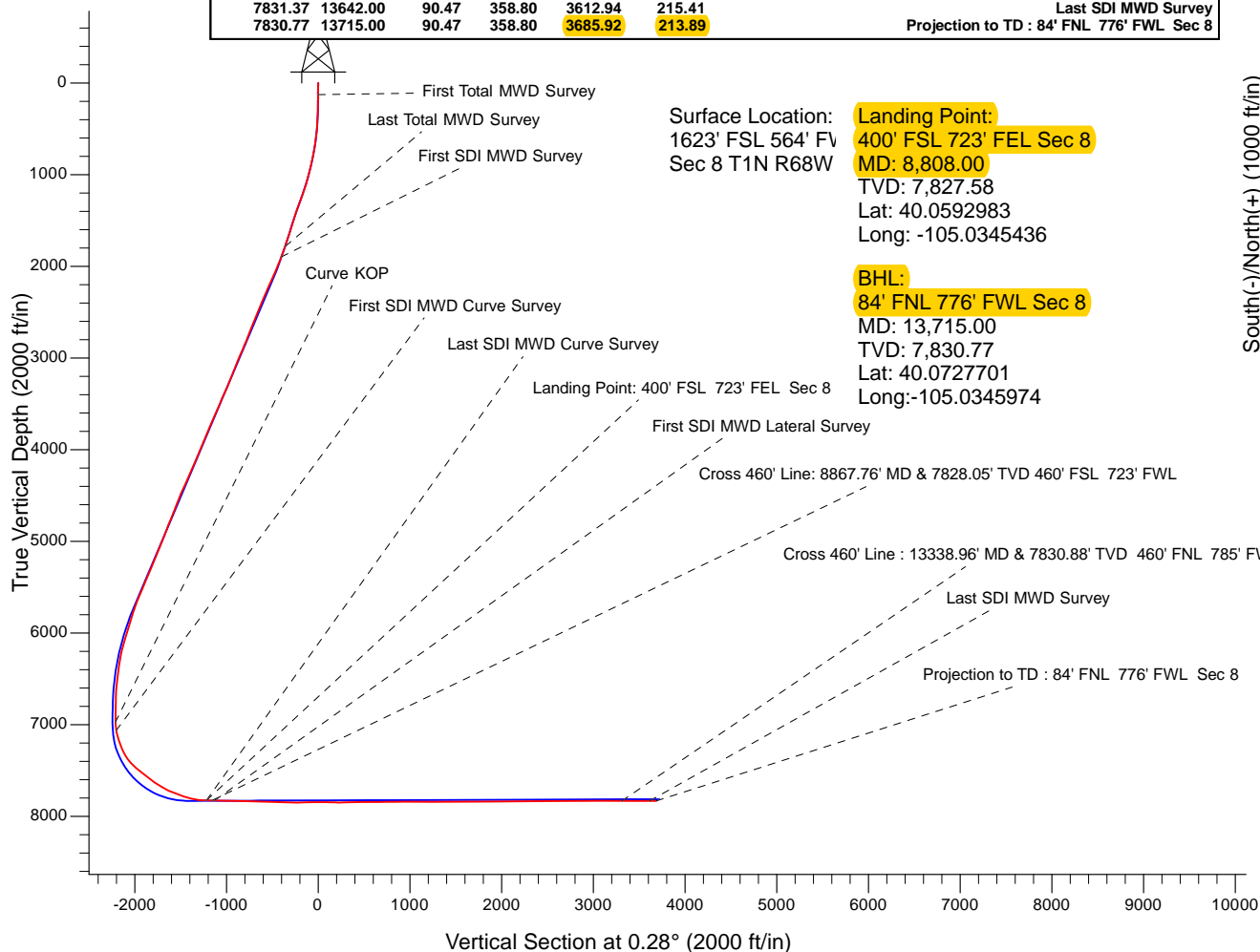
PROJECT DETAILS: US Rockies Wattenberg Planning UTM83

Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Zone 13N (108 W to 102 W)

System Datum: Mean Sea Level
 Local North: True

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Annotation
128.00	128.00	0.13	98.28	-0.02	0.14	First Total MWD Survey
1781.61	1833.00	19.07	173.34	-360.13	42.11	Last Total MWD Survey
1897.20	1956.00	20.91	173.71	-401.91	46.84	First SDI MWD Survey
6976.16	7386.00	0.65	286.51	-2211.24	242.39	Curve KOP
7064.63	7475.00	11.54	352.14	-2203.51	240.74	First SDI MWD Curve Survey
7827.58	8808.00	88.80	359.93	-1219.78	228.99	Last SDI MWD Curve Survey
7827.58	8808.00	88.80	359.93	-1219.78	228.99	Landing Point: 400' FSL 723' FEL Sec 8
7828.05	8867.76	89.56	359.69	-1160.03	228.73	Cross 460' Line: 8867.76' MD & 7828.05' TVD 460' FSL 723' FWL
7828.31	8898.00	89.45	359.67	-1129.79	228.56	First SDI MWD Lateral Survey
7830.88	13338.96	89.75	357.35	3310.03	223.50	Cross 460' Line : 13338.96' MD & 7830.88' TVD 460' FNL 785' FWL
7831.37	13642.00	90.47	358.80	3612.94	215.41	Last SDI MWD Survey
7830.77	13715.00	90.47	358.80	3685.92	213.89	Projection to TD : 84' FNL 776' FWL Sec 8





US ROCKIES REGION PLANNING

US Rockies Wattenberg Planning UTM83

Yellowhammer 12-8HZ Pad

Yellowhammer 4C-8HZ

OH

Design: OH

Survey Report - Geographic

06 December, 2017



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Yellowhammer 4C-8HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 5063' & KB 17' @ 5080.00ft (Xtreme 24)
Site:	Yellowhammer 12-8HZ Pad	MD Reference:	GL 5063' & KB 17' @ 5080.00ft (Xtreme 24)
Well:	Yellowhammer 4C-8HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales Office

Project	US Rockies Wattenberg Planning UTM83		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Zone 13N (108 W to 102 W)		

Site						Yellowhammer 12-8HZ Pad, Site Center : Yellowhammer 4C-8HZ											
Site Position:			Northing:			14,549,548.23 usft			Latitude:			40.0626480					
From:			Lat/Long			Easting:			1,630,522.56 usft			Longitude:			-105.0353620		
Position Uncertainty:			0.00 ft			Slot Radius:			13.200 in			Grid Convergence:			-0.02 °		

Well	Yellowhammer 4C-8HZ, 1623' FSL 564' FWL Sec 8 T1N R68W					
Well Position	+N/-S	0.00 ft	Northing:	14,549,548.23 usft	Latitude:	40.0626480
	+E/-W	0.00 ft	Easting:	1,630,522.56 usft	Longitude:	-105.0353620
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	5,063.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2016	11/17/2017	8.46	66.55	52,134

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00		0.28

Survey Program	Date	12/6/2017			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
128.00	1,833.00	Survey #1 - Surface (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
1,956.00	13,715.00	Survey #2 - Production (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,549,548.23	1,630,522.56	40.0626480	-105.0353620
128.00	0.13	98.28	128.00	-0.02	0.14	14,549,548.21	1,630,522.70	40.0626480	-105.0353615
First Total MWD Survey									
160.00	0.31	336.29	160.00	0.05	0.14	14,549,548.28	1,630,522.70	40.0626482	-105.0353615
192.00	0.62	178.35	192.00	-0.04	0.11	14,549,548.19	1,630,522.67	40.0626479	-105.0353616
223.00	0.92	207.26	223.00	-0.43	0.01	14,549,547.80	1,630,522.56	40.0626469	-105.0353620
254.00	1.23	195.14	253.99	-0.97	-0.20	14,549,547.26	1,630,522.36	40.0626454	-105.0353627
286.00	1.76	182.39	285.98	-1.79	-0.31	14,549,546.43	1,630,522.25	40.0626431	-105.0353631
317.00	2.11	190.92	316.96	-2.83	-0.43	14,549,545.40	1,630,522.12	40.0626403	-105.0353635
349.00	2.15	176.24	348.94	-4.01	-0.51	14,549,544.22	1,630,522.05	40.0626370	-105.0353638
380.00	2.42	173.07	379.92	-5.24	-0.39	14,549,542.99	1,630,522.17	40.0626336	-105.0353634

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Yellowhammer 4C-8HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 5063' & KB 17' @ 5080.00ft (Xtreme 24)
Site:	Yellowhammer 12-8HZ Pad	MD Reference:	GL 5063' & KB 17' @ 5080.00ft (Xtreme 24)
Well:	Yellowhammer 4C-8HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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
412.00	2.81	176.59	411.88	-6.69	-0.26	14,549,541.54	1,630,522.29	40.0626297	-105.0353629
444.00	3.78	172.28	443.83	-8.52	-0.07	14,549,539.71	1,630,522.48	40.0626246	-105.0353622
475.00	3.69	175.36	474.76	-10.53	0.15	14,549,537.70	1,630,522.70	40.0626191	-105.0353615
507.00	4.53	172.64	506.68	-12.81	0.39	14,549,535.42	1,630,522.94	40.0626129	-105.0353606
538.00	5.58	173.43	537.56	-15.52	0.72	14,549,532.71	1,630,523.27	40.0626054	-105.0353594
570.00	6.72	173.51	569.38	-18.92	1.11	14,549,529.30	1,630,523.66	40.0625961	-105.0353580
602.00	7.65	170.00	601.12	-22.88	1.69	14,549,525.34	1,630,524.24	40.0625852	-105.0353559
634.00	8.26	167.01	632.82	-27.22	2.58	14,549,521.01	1,630,525.12	40.0625733	-105.0353528
666.00	8.96	168.24	664.46	-31.90	3.60	14,549,516.33	1,630,526.15	40.0625604	-105.0353491
697.00	9.49	168.66	695.05	-36.77	4.60	14,549,511.46	1,630,527.14	40.0625471	-105.0353455
729.00	10.20	171.93	726.58	-42.16	5.51	14,549,506.07	1,630,528.05	40.0625323	-105.0353423
761.00	10.81	174.04	758.05	-47.95	6.22	14,549,500.28	1,630,528.76	40.0625164	-105.0353397
793.00	11.03	175.98	789.47	-53.99	6.75	14,549,494.24	1,630,529.29	40.0624998	-105.0353378
824.00	11.60	175.45	819.86	-60.05	7.20	14,549,488.17	1,630,529.74	40.0624831	-105.0353362
856.00	12.74	175.45	851.14	-66.78	7.74	14,549,481.45	1,630,530.27	40.0624646	-105.0353343
888.00	13.40	173.51	882.32	-73.98	8.44	14,549,474.24	1,630,530.97	40.0624449	-105.0353318
923.00	13.27	174.57	916.37	-82.01	9.28	14,549,466.22	1,630,531.80	40.0624228	-105.0353288
951.00	13.80	172.46	943.59	-88.52	10.02	14,549,459.71	1,630,532.54	40.0624049	-105.0353262
983.00	14.55	172.37	974.62	-96.29	11.05	14,549,451.94	1,630,533.57	40.0623836	-105.0353225
1,015.00	14.90	171.93	1,005.57	-104.34	12.17	14,549,443.88	1,630,534.68	40.0623615	-105.0353185
1,047.00	15.51	173.69	1,036.45	-112.67	13.21	14,549,435.55	1,630,535.73	40.0623386	-105.0353147
1,078.00	15.86	174.13	1,066.29	-121.00	14.10	14,549,427.22	1,630,536.61	40.0623157	-105.0353116
1,110.00	16.74	173.60	1,097.01	-129.93	15.06	14,549,418.29	1,630,537.57	40.0622912	-105.0353081
1,142.00	17.71	174.48	1,127.57	-139.36	16.04	14,549,408.86	1,630,538.55	40.0622653	-105.0353046
1,173.00	18.33	175.98	1,157.05	-148.91	16.84	14,549,399.31	1,630,539.34	40.0622391	-105.0353018
1,205.00	19.12	175.62	1,187.36	-159.16	17.59	14,549,389.06	1,630,540.09	40.0622110	-105.0352991
1,237.00	19.60	177.03	1,217.55	-169.74	18.27	14,549,378.48	1,630,540.76	40.0621819	-105.0352967
1,269.00	19.95	177.91	1,247.66	-180.56	18.75	14,549,367.66	1,630,541.23	40.0621522	-105.0352950
1,301.00	20.39	175.27	1,277.70	-191.57	19.41	14,549,356.65	1,630,541.89	40.0621219	-105.0352926
1,332.00	20.79	175.62	1,306.72	-202.44	20.27	14,549,345.78	1,630,542.75	40.0620921	-105.0352895
1,364.00	20.61	172.81	1,336.65	-213.69	21.41	14,549,334.53	1,630,543.88	40.0620612	-105.0352854
1,396.00	21.14	170.88	1,366.55	-224.97	23.03	14,549,323.24	1,630,545.50	40.0620302	-105.0352797
1,459.00	17.67	170.09	1,425.97	-245.62	26.48	14,549,302.60	1,630,548.94	40.0619735	-105.0352673
1,491.00	17.09	168.94	1,456.51	-255.01	28.22	14,549,293.20	1,630,550.67	40.0619477	-105.0352611
1,522.00	17.18	169.65	1,486.13	-263.99	29.91	14,549,284.23	1,630,552.37	40.0619231	-105.0352551
1,554.00	17.36	170.79	1,516.69	-273.35	31.53	14,549,274.86	1,630,553.97	40.0618974	-105.0352493
1,586.00	17.62	171.84	1,547.21	-282.86	32.98	14,549,265.36	1,630,555.42	40.0618713	-105.0352441
1,617.00	17.58	170.88	1,576.76	-292.12	34.39	14,549,256.09	1,630,556.83	40.0618458	-105.0352391
1,649.00	17.84	173.16	1,607.24	-301.76	35.74	14,549,246.45	1,630,558.17	40.0618193	-105.0352343
1,681.00	17.75	173.16	1,637.71	-311.47	36.90	14,549,236.74	1,630,559.33	40.0617927	-105.0352301
1,713.00	18.33	174.57	1,668.14	-321.32	37.96	14,549,226.89	1,630,560.39	40.0617656	-105.0352263
1,744.00	19.07	174.31	1,697.50	-331.22	38.92	14,549,217.00	1,630,561.35	40.0617385	-105.0352229
1,776.00	19.12	174.04	1,727.74	-341.63	39.98	14,549,206.58	1,630,562.40	40.0617099	-105.0352191
1,808.00	19.03	173.16	1,757.98	-352.02	41.15	14,549,196.19	1,630,563.57	40.0616813	-105.0352149
1,833.00	19.07	173.34	1,781.61	-360.13	42.11	14,549,188.08	1,630,564.52	40.0616591	-105.0352115
Last Total MWD Survey									
1,956.00	20.91	173.71	1,897.20	-401.91	46.84	14,549,146.30	1,630,569.24	40.0615443	-105.0351946
First SDI MWD Survey									
2,045.00	21.95	176.12	1,980.04	-434.29	49.71	14,549,113.92	1,630,572.09	40.0614554	-105.0351843
2,134.00	23.59	177.93	2,062.11	-468.68	51.48	14,549,079.52	1,630,573.85	40.0613609	-105.0351780
2,223.00	24.49	178.51	2,143.39	-504.92	52.60	14,549,043.28	1,630,574.96	40.0612614	-105.0351740
2,312.00	24.08	176.19	2,224.51	-541.48	54.29	14,549,006.73	1,630,576.63	40.0611610	-105.0351680
2,400.00	23.73	174.79	2,304.96	-577.03	57.09	14,548,971.18	1,630,579.42	40.0610634	-105.0351579
2,489.00	23.13	175.88	2,386.63	-612.30	59.97	14,548,935.91	1,630,582.28	40.0609666	-105.0351476
2,578.00	22.41	173.77	2,468.69	-646.60	63.07	14,548,901.60	1,630,585.37	40.0608724	-105.0351366

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Yellowhammer 4C-8HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 5063' & KB 17' @ 5080.00ft (Xtreme 24)
Site:	Yellowhammer 12-8HZ Pad	MD Reference:	GL 5063' & KB 17' @ 5080.00ft (Xtreme 24)
Well:	Yellowhammer 4C-8HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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	
2,667.00	21.23	175.29	2,551.31	-679.52	66.23	14,548,868.68	1,630,588.52	40.0607820	-105.0351253	
2,756.00	23.18	175.29	2,633.71	-713.04	68.99	14,548,835.16	1,630,591.27	40.0606899	-105.0351154	
2,845.00	22.02	174.16	2,715.87	-747.10	72.13	14,548,801.10	1,630,594.39	40.0605964	-105.0351042	
2,934.00	20.70	174.92	2,798.76	-779.37	75.22	14,548,768.83	1,630,597.47	40.0605078	-105.0350931	
3,023.00	22.87	174.68	2,881.40	-812.26	78.22	14,548,735.94	1,630,600.45	40.0604174	-105.0350824	
3,112.00	24.20	173.95	2,962.99	-847.62	81.74	14,548,700.58	1,630,603.96	40.0603203	-105.0350698	
3,201.00	21.75	174.94	3,044.93	-882.19	85.12	14,548,666.00	1,630,607.33	40.0602254	-105.0350578	
3,290.00	21.28	172.96	3,127.73	-914.65	88.55	14,548,633.55	1,630,610.75	40.0601363	-105.0350455	
3,378.00	21.88	174.18	3,209.56	-946.81	92.17	14,548,601.38	1,630,614.35	40.0600479	-105.0350326	
3,467.00	24.19	175.23	3,291.46	-981.48	95.37	14,548,566.71	1,630,617.54	40.0599527	-105.0350211	
3,556.00	24.60	176.27	3,372.51	-1,018.14	98.09	14,548,530.05	1,630,620.25	40.0598521	-105.0350114	
3,645.00	21.75	174.55	3,454.32	-1,053.05	100.87	14,548,495.14	1,630,623.00	40.0597562	-105.0350015	
3,734.00	24.30	174.83	3,536.22	-1,087.71	104.08	14,548,460.48	1,630,626.21	40.0596610	-105.0349900	
3,823.00	24.55	175.27	3,617.26	-1,124.37	107.26	14,548,423.82	1,630,629.37	40.0595603	-105.0349786	
3,912.00	21.44	172.75	3,699.18	-1,158.94	110.84	14,548,389.24	1,630,632.93	40.0594654	-105.0349659	
4,000.00	22.02	174.32	3,780.93	-1,191.31	114.50	14,548,356.87	1,630,636.58	40.0593765	-105.0349528	
4,089.00	24.30	176.42	3,862.75	-1,226.20	117.29	14,548,321.99	1,630,639.36	40.0592807	-105.0349428	
4,177.00	24.59	176.17	3,942.86	-1,262.54	119.65	14,548,285.65	1,630,641.70	40.0591809	-105.0349344	
4,266.00	22.30	174.28	4,024.51	-1,297.82	122.57	14,548,250.36	1,630,644.61	40.0590840	-105.0349239	
4,356.00	23.67	171.41	4,107.36	-1,332.68	126.97	14,548,215.50	1,630,649.00	40.0589883	-105.0349082	
4,444.00	23.05	171.12	4,188.15	-1,367.16	132.27	14,548,181.01	1,630,654.28	40.0588936	-105.0348893	
4,533.00	21.82	170.45	4,270.41	-1,400.69	137.70	14,548,147.48	1,630,659.70	40.0588015	-105.0348699	
4,622.00	25.18	176.02	4,352.03	-1,435.90	141.76	14,548,112.27	1,630,663.75	40.0587048	-105.0348553	
4,711.00	26.01	174.90	4,432.30	-1,474.23	144.81	14,548,073.94	1,630,666.78	40.0585996	-105.0348445	
4,799.00	22.22	172.88	4,512.60	-1,509.97	148.59	14,548,038.20	1,630,670.54	40.0585014	-105.0348309	
4,888.00	20.93	171.33	4,595.37	-1,542.39	153.07	14,548,005.78	1,630,675.01	40.0584124	-105.0348149	
4,977.00	21.44	175.22	4,678.36	-1,574.31	156.82	14,547,973.85	1,630,678.75	40.0583247	-105.0348015	
5,092.00	23.16	175.88	4,784.75	-1,617.82	160.20	14,547,930.35	1,630,682.11	40.0582052	-105.0347895	
5,180.00	20.87	178.56	4,866.33	-1,650.75	161.84	14,547,897.41	1,630,683.74	40.0581148	-105.0347836	
5,269.00	21.34	173.93	4,949.37	-1,682.71	163.95	14,547,865.46	1,630,685.84	40.0580270	-105.0347761	
5,358.00	22.01	176.23	5,032.08	-1,715.45	166.76	14,547,832.71	1,630,688.63	40.0579371	-105.0347660	
5,447.00	21.33	173.58	5,114.79	-1,748.18	169.66	14,547,799.98	1,630,691.52	40.0578473	-105.0347556	
5,535.00	22.77	174.67	5,196.35	-1,781.04	173.03	14,547,767.12	1,630,694.88	40.0577570	-105.0347436	
5,624.00	23.92	176.84	5,278.06	-1,816.21	175.63	14,547,731.95	1,630,697.46	40.0576604	-105.0347343	
5,713.00	22.90	174.15	5,359.74	-1,851.45	178.39	14,547,696.71	1,630,700.21	40.0575637	-105.0347245	
5,802.00	22.35	174.33	5,441.89	-1,885.52	181.82	14,547,662.64	1,630,703.63	40.0574701	-105.0347122	
5,891.00	23.12	172.29	5,523.97	-1,919.67	185.84	14,547,628.49	1,630,707.64	40.0573763	-105.0346978	
5,980.00	23.36	170.75	5,605.75	-1,954.40	191.02	14,547,593.75	1,630,712.80	40.0572809	-105.0346793	
6,069.00	20.82	170.57	5,688.21	-1,987.43	196.45	14,547,560.73	1,630,718.22	40.0571902	-105.0346599	
6,158.00	17.95	168.19	5,772.16	-2,016.46	201.85	14,547,531.69	1,630,723.61	40.0571105	-105.0346406	
6,247.00	17.20	167.00	5,857.01	-2,042.71	207.62	14,547,505.44	1,630,729.36	40.0570384	-105.0346200	
6,336.00	18.01	166.93	5,941.84	-2,068.93	213.69	14,547,479.22	1,630,735.42	40.0569664	-105.0345983	
6,425.00	16.98	175.29	6,026.73	-2,095.29	217.87	14,547,452.86	1,630,739.59	40.0568940	-105.0345834	
6,514.00	15.57	174.02	6,112.16	-2,120.12	220.18	14,547,428.02	1,630,741.89	40.0568258	-105.0345751	
6,603.00	13.26	168.28	6,198.36	-2,142.00	223.50	14,547,406.14	1,630,745.20	40.0567658	-105.0345633	
6,692.00	10.89	166.83	6,285.39	-2,160.18	227.49	14,547,387.96	1,630,749.19	40.0567158	-105.0345490	
6,781.00	8.67	162.95	6,373.09	-2,174.78	231.37	14,547,373.36	1,630,753.06	40.0566757	-105.0345351	
6,869.00	6.91	161.91	6,460.27	-2,186.16	234.96	14,547,361.98	1,630,756.65	40.0566445	-105.0345223	
6,958.00	6.23	160.83	6,548.69	-2,195.81	238.21	14,547,352.33	1,630,759.89	40.0566180	-105.0345107	
7,047.00	4.25	155.78	6,637.31	-2,203.38	241.15	14,547,344.76	1,630,762.83	40.0565972	-105.0345002	
7,135.00	1.29	149.21	6,725.20	-2,207.20	242.99	14,547,340.93	1,630,764.67	40.0565867	-105.0344936	
7,224.00	0.77	203.08	6,814.19	-2,208.61	243.27	14,547,339.52	1,630,764.95	40.0565828	-105.0344926	
7,313.00	1.56	186.30	6,903.17	-2,210.37	242.90	14,547,337.77	1,630,764.58	40.0565780	-105.0344939	
7,386.00	0.65	286.51	6,976.16	-2,211.24	242.39	14,547,336.90	1,630,764.07	40.0565756	-105.0344957	
Curve KOP										

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Yellowhammer 4C-8HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 5063' & KB 17' @ 5080.00ft (Xtreme 24)
Site:	Yellowhammer 12-8HZ Pad	MD Reference:	GL 5063' & KB 17' @ 5080.00ft (Xtreme 24)
Well:	Yellowhammer 4C-8HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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
7,402.00	0.92	307.97	6,992.16	-2,211.13	242.21	14,547,337.00	1,630,763.88	40.0565759	-105.0344964
7,475.00	11.54	352.14	7,064.63	-2,203.51	240.74	14,547,344.62	1,630,762.42	40.0565968	-105.0345016
First SDI MWD Curve Survey									
7,491.00	13.93	352.73	7,080.24	-2,200.02	240.28	14,547,348.12	1,630,761.96	40.0566064	-105.0345033
7,580.00	18.22	354.37	7,165.74	-2,175.53	237.56	14,547,372.61	1,630,759.25	40.0566737	-105.0345130
7,669.00	22.56	355.75	7,249.14	-2,144.65	234.92	14,547,403.49	1,630,756.63	40.0567585	-105.0345224
7,757.00	28.86	355.77	7,328.39	-2,106.59	232.10	14,547,441.55	1,630,753.82	40.0568630	-105.0345325
7,846.00	40.38	359.91	7,401.52	-2,056.17	230.47	14,547,491.97	1,630,752.21	40.0570015	-105.0345383
7,935.00	49.67	4.80	7,464.37	-1,993.38	233.27	14,547,554.76	1,630,755.03	40.0571739	-105.0345283
8,023.00	51.42	2.48	7,520.30	-1,925.58	237.57	14,547,622.56	1,630,759.36	40.0573601	-105.0345130
8,112.00	53.10	359.50	7,574.78	-1,855.22	238.76	14,547,692.91	1,630,760.58	40.0575533	-105.0345087
8,201.00	52.86	356.00	7,628.37	-1,784.24	235.97	14,547,763.90	1,630,757.82	40.0577482	-105.0345187
8,290.00	59.39	357.50	7,677.96	-1,710.50	231.82	14,547,837.64	1,630,753.70	40.0579507	-105.0345335
8,379.00	66.46	358.60	7,718.44	-1,631.35	229.15	14,547,916.79	1,630,751.06	40.0581681	-105.0345430
8,468.00	68.81	359.81	7,752.30	-1,549.06	228.02	14,547,999.08	1,630,749.96	40.0583941	-105.0345471
8,557.00	70.38	359.40	7,783.33	-1,465.65	227.44	14,548,082.49	1,630,749.42	40.0586231	-105.0345491
8,645.00	76.65	0.51	7,808.29	-1,381.31	227.39	14,548,166.83	1,630,749.40	40.0588547	-105.0345493
8,735.00	84.29	0.89	7,823.18	-1,292.63	228.48	14,548,255.51	1,630,750.52	40.0590983	-105.0345454
8,808.00	88.80	359.93	7,827.58	-1,219.78	228.99	14,548,328.36	1,630,751.07	40.0592983	-105.0345436
Last SDI MWD Curve Survey - Landing Point: 400' FSL 723' FEL Sec 8									
8,823.00	89.73	359.73	7,827.77	-1,204.78	228.95	14,548,343.36	1,630,751.03	40.0593395	-105.0345437
8,867.76	89.56	359.69	7,828.05	-1,160.03	228.73	14,548,388.11	1,630,750.82	40.0594624	-105.0345445
Cross 460' Line: 8867.76' MD & 7828.05' TVD 460' FSL 723' FWL									
8,898.00	89.45	359.67	7,828.31	-1,129.79	228.56	14,548,418.35	1,630,750.67	40.0595455	-105.0345451
First SDI MWD Lateral Survey									
8,912.00	89.40	359.66	7,828.45	-1,115.79	228.48	14,548,432.35	1,630,750.59	40.0595839	-105.0345454
9,001.00	89.70	358.82	7,829.15	-1,026.80	227.30	14,548,521.34	1,630,749.44	40.0598283	-105.0345496
9,089.00	88.93	358.74	7,830.20	-938.83	225.42	14,548,609.31	1,630,747.61	40.0600699	-105.0345563
9,178.00	89.06	359.14	7,831.76	-849.86	223.78	14,548,698.28	1,630,746.00	40.0603142	-105.0345622
9,267.00	88.63	0.19	7,833.55	-760.88	223.26	14,548,787.26	1,630,745.51	40.0605585	-105.0345641
9,356.00	87.59	359.40	7,836.49	-671.93	222.94	14,548,876.21	1,630,745.23	40.0608028	-105.0345652
9,445.00	87.15	358.99	7,840.57	-583.03	221.69	14,548,965.11	1,630,744.01	40.0610469	-105.0345697
9,534.00	89.13	359.28	7,843.46	-494.09	220.35	14,549,054.05	1,630,742.71	40.0612912	-105.0345745
9,623.00	88.42	358.33	7,845.36	-405.13	218.49	14,549,143.01	1,630,740.89	40.0615355	-105.0345811
9,712.00	88.53	358.31	7,847.73	-316.20	215.88	14,549,231.94	1,630,738.31	40.0617797	-105.0345904
9,801.00	90.47	358.54	7,848.51	-227.24	213.44	14,549,320.90	1,630,735.90	40.0620240	-105.0345992
9,890.00	91.41	358.58	7,847.05	-138.29	211.20	14,549,409.86	1,630,733.70	40.0622683	-105.0346071
9,979.00	90.80	359.06	7,845.33	-49.32	209.37	14,549,498.82	1,630,731.90	40.0625126	-105.0346137
10,068.00	90.03	359.32	7,844.69	39.67	208.11	14,549,587.81	1,630,730.68	40.0627570	-105.0346182
10,157.00	87.58	359.74	7,846.54	128.64	207.38	14,549,676.78	1,630,729.99	40.0630013	-105.0346208
10,245.00	89.57	0.48	7,848.73	216.61	207.55	14,549,764.75	1,630,730.19	40.0632429	-105.0346202
10,334.00	92.08	1.16	7,847.45	305.58	208.82	14,549,853.72	1,630,731.50	40.0634872	-105.0346156
10,424.00	90.84	359.95	7,845.16	395.54	209.69	14,549,943.69	1,630,732.41	40.0637343	-105.0346125
10,513.00	90.60	359.95	7,844.04	484.54	209.62	14,550,032.68	1,630,732.36	40.0639786	-105.0346128
10,601.00	90.07	0.54	7,843.53	572.53	209.99	14,550,120.67	1,630,732.78	40.0642203	-105.0346114
10,690.00	91.07	0.81	7,842.64	661.52	211.04	14,550,209.66	1,630,733.86	40.0644647	-105.0346077
10,779.00	90.40	0.94	7,841.50	750.50	212.40	14,550,298.64	1,630,735.25	40.0647090	-105.0346028
10,868.00	90.30	0.80	7,840.95	839.49	213.75	14,550,387.63	1,630,736.64	40.0649534	-105.0345980
10,956.00	90.77	0.74	7,840.13	927.48	214.93	14,550,475.62	1,630,737.86	40.0651950	-105.0345938
11,045.00	88.89	0.68	7,840.40	1,016.47	216.04	14,550,564.61	1,630,739.00	40.0654394	-105.0345898
11,134.00	89.40	0.64	7,841.72	1,105.45	217.06	14,550,653.59	1,630,740.06	40.0656838	-105.0345862
11,223.00	89.93	0.60	7,842.25	1,194.44	218.02	14,550,742.58	1,630,741.06	40.0659282	-105.0345827
11,312.00	90.60	0.26	7,841.83	1,283.44	218.69	14,550,831.58	1,630,741.76	40.0661726	-105.0345803
11,401.00	91.14	0.17	7,840.48	1,372.43	219.03	14,550,920.57	1,630,742.13	40.0664169	-105.0345791

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Yellowhammer 4C-8HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 5063' & KB 17' @ 5080.00ft (Xtreme 24)
Site:	Yellowhammer 12-8HZ Pad	MD Reference:	GL 5063' & KB 17' @ 5080.00ft (Xtreme 24)
Well:	Yellowhammer 4C-8HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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
11,490.00	91.21	0.26	7,838.66	1,461.41	219.36	14,551,009.55	1,630,742.50	40.0666613	-105.0345779
11,579.00	88.96	0.45	7,838.53	1,550.40	219.91	14,551,098.54	1,630,743.08	40.0669057	-105.0345760
11,668.00	89.87	0.28	7,839.43	1,639.39	220.48	14,551,187.53	1,630,743.69	40.0671501	-105.0345739
11,756.00	90.23	359.86	7,839.36	1,727.39	220.59	14,551,275.53	1,630,743.83	40.0673917	-105.0345735
11,845.00	90.60	359.60	7,838.71	1,816.39	220.17	14,551,364.53	1,630,743.44	40.0676361	-105.0345750
11,934.00	89.83	1.01	7,838.38	1,905.39	220.64	14,551,453.52	1,630,743.95	40.0678805	-105.0345733
12,023.00	90.40	1.25	7,838.20	1,994.37	222.39	14,551,542.50	1,630,745.74	40.0681249	-105.0345671
12,112.00	90.80	0.79	7,837.27	2,083.35	223.98	14,551,631.48	1,630,747.36	40.0683692	-105.0345614
12,201.00	91.11	0.43	7,835.78	2,172.33	224.93	14,551,720.46	1,630,748.35	40.0686136	-105.0345580
12,289.00	90.20	0.19	7,834.78	2,260.32	225.40	14,551,808.46	1,630,748.86	40.0688552	-105.0345563
12,378.00	90.37	2.03	7,834.34	2,349.30	227.13	14,551,897.43	1,630,750.62	40.0690996	-105.0345501
12,467.00	90.34	1.36	7,833.78	2,438.26	229.76	14,551,986.39	1,630,753.28	40.0693439	-105.0345407
12,555.00	89.83	0.46	7,833.65	2,526.25	231.16	14,552,074.38	1,630,754.72	40.0695855	-105.0345357
12,644.00	90.30	359.81	7,833.55	2,615.25	231.37	14,552,163.38	1,630,754.96	40.0698299	-105.0345350
12,733.00	91.04	0.13	7,832.51	2,704.24	231.32	14,552,252.37	1,630,754.95	40.0700743	-105.0345351
12,822.00	90.20	0.94	7,831.55	2,793.23	232.15	14,552,341.36	1,630,755.82	40.0703187	-105.0345322
12,911.00	90.47	0.04	7,831.03	2,882.22	232.91	14,552,430.35	1,630,756.61	40.0705631	-105.0345294
12,999.00	90.77	359.48	7,830.08	2,970.22	232.54	14,552,518.35	1,630,756.28	40.0708047	-105.0345308
13,088.00	90.17	358.81	7,829.35	3,059.20	231.22	14,552,607.33	1,630,754.99	40.0710491	-105.0345355
13,177.00	89.46	358.76	7,829.63	3,148.18	229.33	14,552,696.31	1,630,753.14	40.0712934	-105.0345422
13,266.00	89.53	357.75	7,830.42	3,237.14	226.62	14,552,785.27	1,630,750.46	40.0715377	-105.0345519
13,338.96	89.75	357.35	7,830.88	3,310.03	223.50	14,552,858.16	1,630,747.37	40.0717379	-105.0345631
Cross 460' Line : 13338.96' MD & 7830.88' TVD 460' FNL 785' FWL									
13,355.00	89.80	357.26	7,830.94	3,326.05	222.74	14,552,874.18	1,630,746.62	40.0717819	-105.0345658
13,444.00	89.87	358.09	7,831.19	3,414.98	219.13	14,552,963.11	1,630,743.05	40.0720261	-105.0345787
13,532.00	89.73	359.20	7,831.50	3,502.95	217.05	14,553,051.08	1,630,741.00	40.0722677	-105.0345861
13,621.00	90.27	359.17	7,831.50	3,591.94	215.79	14,553,140.07	1,630,739.77	40.0725121	-105.0345906
13,642.00	90.47	358.80	7,831.37	3,612.94	215.41	14,553,161.07	1,630,739.41	40.0725697	-105.0345920
Last SDI MWD Survey									
13,715.00	90.47	358.80	7,830.77	3,685.92	213.89	14,553,234.05	1,630,737.91	40.0727701	-105.0345974
Projection to TD : 84' FNL 776' FWL Sec 8									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
128.00	128.00	-0.02	0.14	First Total MWD Survey	
1,833.00	1,781.61	-360.13	42.11	Last Total MWD Survey	
1,956.00	1,897.20	-401.91	46.84	First SDI MWD Survey	
7,386.00	6,976.16	-2,211.24	242.39	Curve KOP	
7,475.00	7,064.63	-2,203.51	240.74	First SDI MWD Curve Survey	
8,808.00	7,827.58	-1,219.78	228.99	Last SDI MWD Curve Survey	
8,808.00	7,827.58	-1,219.78	228.99	Landing Point: 400' FSL 723' FEL Sec 8	
8,867.76	7,828.05	-1,160.03	228.73	Cross 460' Line: 8867.76' MD & 7828.05' TVD 460' FSL 723' FWL	
8,898.00	7,828.31	-1,129.79	228.56	First SDI MWD Lateral Survey	
13,338.96	7,830.88	3,310.03	223.50	Cross 460' Line : 13338.96' MD & 7830.88' TVD 460' FNL 785' FWL	
13,642.00	7,831.37	3,612.94	215.41	Last SDI MWD Survey	
13,715.00	7,830.77	3,685.92	213.89	Projection to TD : 84' FNL 776' FWL Sec 8	