

#### WELL DETAILS: Whiston 39C-33HZ

#### PROJECT DETAILS: US Rockies Wattenberg Planning UTM83

GL 4905' & KB 20' @ 4925.00ft (Precision 461) 4905.00  
 Northing Easting Latitude Longitude  
 14587872.77 1670741.64 40.1678470 -104.8914500

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

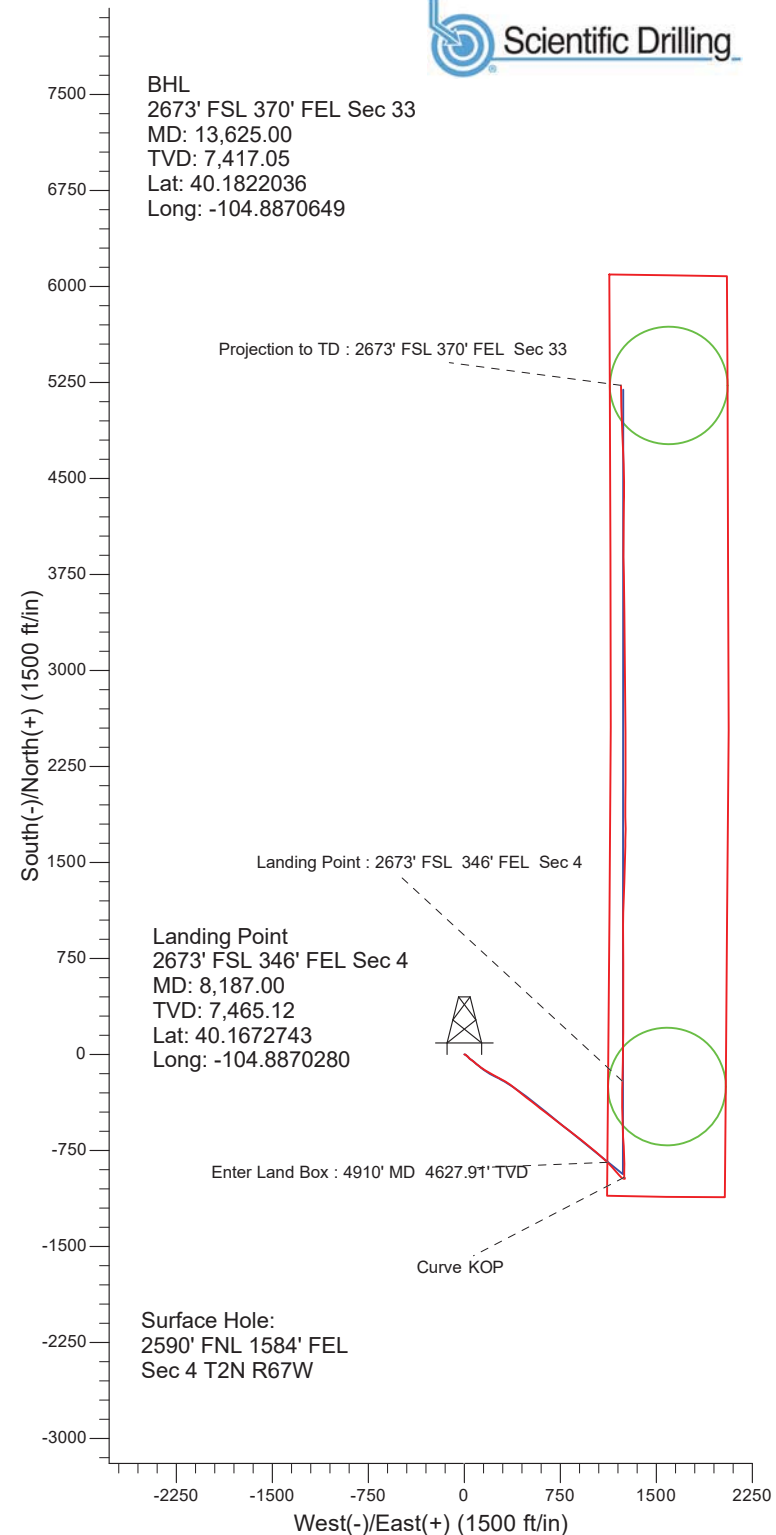
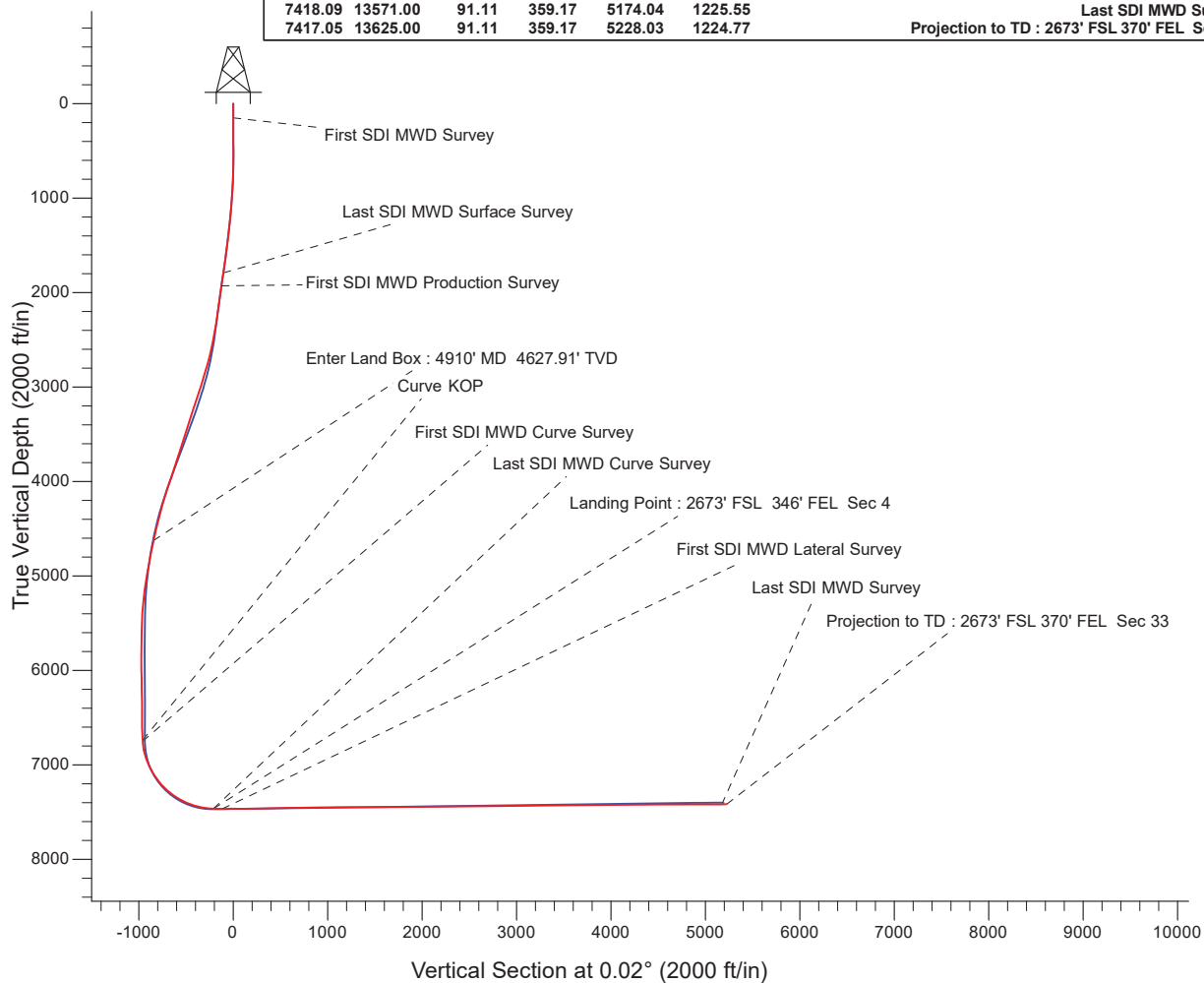
System Datum: Mean Sea Level  
 Local North: True

Design: OH (Whiston 39C-33HZ/OH)

Created By: Seth Burstad Date: 3-24-2017

#### ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Annotation
150.00	150.00	0.30	53.58	0.23	0.32	First SDI MWD Survey
1793.33	1808.00	13.65	128.94	-104.00	134.09	Last SDI MWD Surface Survey
1928.31	1947.00	14.00	120.23	-122.77	161.37	First SDI MWD Production Survey
4627.91	4910.12	18.09	134.90	-842.52	1118.92	Enter Land Box : 4910' MD 4627.91' TVD
6738.59	7040.00	2.66	349.42	-960.27	1250.59	Curve KOP
6750.58	7052.00	2.97	350.00	-959.69	1250.49	First SDI MWD Curve Survey
7465.11	8187.00	87.98	1.72	-208.52	1235.37	Landing Point : 2673' FSL 346' FEL Sec 4
7465.11	8187.00	87.98	1.72	-208.52	1235.37	Last SDI MWD Curve Survey
7466.69	8281.00	90.10	0.89	-114.56	1237.51	First SDI MWD Lateral Survey
7418.09	13571.00	91.11	359.17	5174.04	1225.55	Last SDI MWD Survey
7417.05	13625.00	91.11	359.17	5228.03	1224.77	Projection to TD : 2673' FSL 370' FEL Sec 33





# **US ROCKIES REGION PLANNING**

**US Rockies Wattenberg Planning UTM83**

**Whiston 4-7HZ Pad 2N-67W-4**

**Whiston 39C-33HZ**

**OH**

**Design: OH**

## **Standard Survey Report**

**24 March, 2017**



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well Whiston 39C-33HZ
<b>Project:</b>	US Rockies Wattenberg Planning UTM83	<b>TVD Reference:</b>	GL 4905' & KB 20' @ 4925.00ft (Precision 461)
<b>Site:</b>	Whiston 4-7HZ Pad 2N-67W-4	<b>MD Reference:</b>	GL 4905' & KB 20' @ 4925.00ft (Precision 461)
<b>Well:</b>	Whiston 39C-33HZ	<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>	US Rockies Wattenberg Planning UTM83		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Zone 13N (108 W to 102 W)		

Site		Whiston 4-7HZ Pad 2N-67W-4, Site Center : Whiston 9N-33HZ			
Site Position:		Northing:	14,587,873.80 usft	Latitude:	40.1678500
From:	Lat/Long	Easting:	1,670,696.66 usft	Longitude:	-104.8916110
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.07 °

Well	Whiston 39C-33HZ, 2590' FNL 1584' FEL Sec 4 T2N R67W					
Well Position	+N/-S	0.00 ft	Northing:	14,587,872.76 usft	Latitude:	40.1678470
	+E/-W	0.00 ft	Easting:	1,670,741.63 usft	Longitude:	-104.8914500
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	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>
	BGGM2016	1/10/2017	8.47	66.69	52,300

<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		0.02

<b>Survey Program</b>	<b>Date</b>	3/24/2017			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
150.00	1,808.00	Survey #1 - Surface (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
1,808.00	13,625.00	Survey #2 - Production (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	

<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 (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.00	0.30	53.58	150.00	0.23	0.32	0.23	0.20	0.20	0.00	
<b>First SDI MWD Survey</b>										
232.00	0.21	68.88	232.00	0.41	0.63	0.41	0.14	-0.11	18.66	
320.00	0.27	87.18	320.00	0.48	0.99	0.48	0.11	0.07	20.80	
407.00	0.24	90.49	407.00	0.49	1.37	0.49	0.04	-0.03	3.80	
494.00	0.46	100.20	494.00	0.43	1.90	0.43	0.26	0.25	11.16	
582.00	0.30	88.13	581.99	0.37	2.48	0.37	0.20	-0.18	-13.72	
669.00	1.26	92.18	668.98	0.34	3.66	0.35	1.10	1.10	4.66	
758.00	2.64	111.83	757.93	-0.46	6.54	-0.45	1.70	1.55	22.08	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well Whiston 39C-33HZ
<b>Project:</b>	US Rockies Wattenberg Planning UTM83	<b>TVD Reference:</b>	GL 4905' & KB 20' @ 4925.00ft (Precision 461)
<b>Site:</b>	Whiston 4-7HZ Pad 2N-67W-4	<b>MD Reference:</b>	GL 4905' & KB 20' @ 4925.00ft (Precision 461)
<b>Well:</b>	Whiston 39C-33HZ	<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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
844.00	4.05	127.89	843.78	-3.06	10.78	-3.05	1.95	1.64	18.67
933.00	4.83	127.88	932.52	-7.29	16.21	-7.28	0.88	0.88	-0.01
1,019.00	6.29	131.20	1,018.11	-12.61	22.62	-12.61	1.74	1.70	3.86
1,108.00	7.68	136.21	1,106.45	-20.12	30.40	-20.11	1.70	1.56	5.63
1,195.00	8.86	133.39	1,192.54	-28.92	39.29	-28.91	1.43	1.36	-3.24
1,282.00	9.76	130.10	1,278.40	-38.27	49.80	-38.25	1.20	1.03	-3.78
1,370.00	10.83	127.17	1,364.98	-48.07	62.10	-48.05	1.35	1.22	-3.33
1,459.00	10.87	128.41	1,452.39	-58.34	75.34	-58.31	0.27	0.04	1.39
1,546.00	11.47	126.82	1,537.74	-68.62	88.69	-68.59	0.78	0.69	-1.83
1,635.00	12.63	128.13	1,624.78	-79.93	103.43	-79.89	1.34	1.30	1.47
1,721.00	12.90	127.70	1,708.65	-91.61	118.42	-91.56	0.33	0.31	-0.50
1,808.00	13.65	128.94	1,793.33	-104.00	134.09	-103.95	0.92	0.86	1.43
Last SDI MWD Surface Survey									
1,947.00	14.00	120.23	1,928.31	-122.77	161.37	-122.72	1.52	0.25	-6.27
First SDI MWD Production Survey									
2,040.00	15.19	119.19	2,018.31	-134.38	181.73	-134.31	1.31	1.28	-1.12
2,135.00	17.34	118.97	2,109.50	-147.31	204.99	-147.23	2.26	2.26	-0.23
2,228.00	18.47	119.25	2,198.00	-161.22	229.96	-161.14	1.22	1.22	0.30
2,323.00	18.59	118.62	2,288.07	-175.82	256.39	-175.73	0.25	0.13	-0.66
2,417.00	18.45	117.05	2,377.21	-189.77	282.79	-189.67	0.55	-0.15	-1.67
2,512.00	19.45	119.22	2,467.06	-204.32	309.98	-204.22	1.29	1.05	2.28
2,606.00	20.33	122.84	2,555.45	-220.82	337.36	-220.70	1.61	0.94	3.85
2,701.00	22.68	126.81	2,643.84	-240.75	365.89	-240.62	2.91	2.47	4.18
2,795.00	24.10	128.72	2,730.11	-263.61	395.38	-263.47	1.71	1.51	2.03
2,889.00	25.53	129.17	2,815.43	-288.41	426.06	-288.26	1.53	1.52	0.48
2,982.00	26.19	129.01	2,899.12	-313.99	457.54	-313.83	0.71	0.71	-0.17
3,077.00	25.86	127.32	2,984.49	-339.75	490.31	-339.57	0.85	-0.35	-1.78
3,170.00	27.89	128.31	3,067.44	-365.53	523.51	-365.35	2.24	2.18	1.06
3,265.00	28.30	127.85	3,151.24	-393.12	558.73	-392.93	0.49	0.43	-0.48
3,359.00	28.14	127.88	3,234.07	-420.40	593.82	-420.20	0.17	-0.17	0.03
3,453.00	27.39	127.73	3,317.25	-447.25	628.41	-447.03	0.80	-0.80	-0.16
3,548.00	28.47	129.33	3,401.18	-474.97	663.21	-474.74	1.38	1.14	1.68
3,642.00	28.21	128.69	3,483.92	-503.06	697.89	-502.81	0.43	-0.28	-0.68
3,736.00	27.83	127.02	3,566.90	-530.16	732.75	-529.90	0.93	-0.40	-1.78
3,829.00	27.83	126.98	3,649.14	-556.29	767.42	-556.02	0.02	0.00	-0.04
3,923.00	27.71	125.60	3,732.32	-582.21	802.72	-581.93	0.70	-0.13	-1.47
4,017.00	28.32	126.07	3,815.30	-608.06	838.51	-607.77	0.69	0.65	0.50
4,111.00	28.75	127.11	3,897.88	-634.83	874.56	-634.52	0.70	0.46	1.11
4,204.00	29.25	129.76	3,979.23	-662.85	909.87	-662.54	1.48	0.54	2.85
4,298.00	27.78	130.14	4,061.82	-691.66	944.27	-691.33	1.58	-1.56	0.40
4,393.00	25.43	130.44	4,146.76	-719.17	976.72	-718.83	2.48	-2.47	0.32
4,487.00	24.63	130.55	4,231.93	-745.00	1,006.97	-744.64	0.85	-0.85	0.12
4,582.00	21.98	128.97	4,319.17	-769.05	1,035.84	-768.69	2.87	-2.79	-1.66

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<b>Site:</b>	Whiston 4-7HZ Pad 2N-67W-4	<b>MD Reference:</b>	GL 4905' & KB 20' @ 4925.00ft (Precision 461)
<b>Well:</b>	Whiston 39C-33HZ	<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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,675.00	20.13	130.26	4,405.96	-790.34	1,061.58	-789.97	2.05	-1.99	1.39	
4,769.00	19.36	131.40	4,494.43	-811.10	1,085.61	-810.72	0.92	-0.82	1.21	
4,863.00	18.94	134.14	4,583.23	-832.03	1,108.25	-831.64	1.06	-0.45	2.91	
4,910.12	18.09	134.90	4,627.91	-842.52	1,118.92	-842.13	1.87	-1.80	1.61	
<b>Enter Land Box : 4910' MD 4627.91' TVD</b>										
4,958.00	17.23	135.74	4,673.53	-852.84	1,129.13	-852.45	1.87	-1.80	1.76	
5,052.00	14.29	137.35	4,763.99	-871.35	1,146.71	-870.95	3.16	-3.13	1.71	
5,146.00	13.88	137.83	4,855.16	-888.24	1,162.14	-887.83	0.45	-0.44	0.51	
5,268.00	13.62	138.50	4,973.67	-909.84	1,181.49	-909.43	0.25	-0.21	0.55	
5,363.00	11.21	139.89	5,066.44	-925.28	1,194.85	-924.87	2.56	-2.54	1.46	
5,458.00	10.11	138.45	5,159.80	-938.59	1,206.33	-938.17	1.19	-1.16	-1.52	
5,552.00	7.52	139.15	5,252.68	-949.42	1,215.83	-948.99	2.76	-2.76	0.74	
5,646.00	6.77	130.79	5,345.95	-957.69	1,224.04	-957.26	1.36	-0.80	-8.89	
5,740.00	5.26	124.24	5,439.43	-963.73	1,231.80	-963.30	1.76	-1.61	-6.97	
5,832.00	3.94	118.22	5,531.14	-967.60	1,238.07	-967.17	1.53	-1.43	-6.54	
5,928.00	3.38	108.46	5,626.94	-970.06	1,243.66	-969.62	0.87	-0.58	-10.17	
6,021.00	2.87	105.37	5,719.80	-971.54	1,248.51	-971.11	0.58	-0.55	-3.32	
6,115.00	1.42	78.28	5,813.74	-971.93	1,251.92	-971.49	1.84	-1.54	-28.82	
6,210.00	1.17	96.26	5,908.71	-971.80	1,254.04	-971.36	0.50	-0.26	18.93	
6,303.00	0.93	1.98	6,001.70	-971.14	1,255.01	-970.71	1.66	-0.26	-101.38	
6,398.00	0.71	354.86	6,096.69	-969.79	1,254.98	-969.35	0.25	-0.23	-7.49	
6,492.00	0.85	343.95	6,190.68	-968.54	1,254.73	-968.10	0.22	0.15	-11.61	
6,586.00	0.93	338.46	6,284.67	-967.16	1,254.26	-966.72	0.12	0.09	-5.84	
6,680.00	1.05	316.24	6,378.66	-965.83	1,253.39	-965.39	0.42	0.13	-23.64	
6,772.00	0.91	335.82	6,470.65	-964.55	1,252.50	-964.11	0.39	-0.15	21.28	
6,864.00	0.80	321.63	6,562.64	-963.38	1,251.81	-962.94	0.26	-0.12	-15.42	
6,958.00	0.56	327.77	6,656.63	-962.48	1,251.15	-962.04	0.27	-0.26	6.53	
7,040.00	2.66	349.42	6,738.59	-960.27	1,250.59	-959.83	2.62	2.56	26.40	
<b>Curve KOP</b>										
7,052.00	2.97	350.00	6,750.58	-959.69	1,250.49	-959.25	2.62	2.61	4.86	
<b>First SDI MWD Curve Survey</b>										
7,147.00	12.45	0.27	6,844.61	-947.00	1,250.11	-946.56	10.04	9.98	10.81	
7,241.00	18.95	2.80	6,935.06	-921.59	1,250.90	-921.16	6.95	6.91	2.69	
7,336.00	25.55	359.26	7,022.94	-885.66	1,251.39	-885.22	7.09	6.95	-3.73	
7,430.00	32.83	359.47	7,104.95	-839.85	1,250.89	-839.41	7.75	7.74	0.22	
7,525.00	39.34	357.87	7,181.68	-783.95	1,249.53	-783.51	6.92	6.85	-1.68	
7,620.00	45.98	355.14	7,251.51	-719.74	1,245.51	-719.31	7.25	6.99	-2.87	
7,715.00	53.61	357.25	7,312.80	-647.40	1,240.78	-646.97	8.21	8.03	2.22	
7,809.00	60.54	358.96	7,363.86	-568.60	1,238.22	-568.16	7.53	7.37	1.82	
7,905.00	66.70	359.00	7,406.49	-482.65	1,236.69	-482.22	6.42	6.42	0.04	
7,998.00	74.55	358.56	7,437.32	-395.00	1,234.81	-394.57	8.45	8.44	-0.47	
8,093.00	81.82	0.18	7,456.76	-302.09	1,233.81	-301.66	7.83	7.65	1.71	
8,187.00	87.98	1.72	7,465.12	-208.52	1,235.37	-208.09	6.75	6.55	1.64	
<b>Landing Point : 2673' FSL 346' FEL Sec 4 - Last SDI MWD Curve Survey</b>										

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<b>Site:</b>	Whiston 4-7HZ Pad 2N-67W-4	<b>MD Reference:</b>	GL 4905' & KB 20' @ 4925.00ft (Precision 461)
<b>Well:</b>	Whiston 39C-33HZ	<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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,281.00	90.10	0.89	7,466.69	-114.56	1,237.51	-114.13	2.42	2.26	-0.88	
<b>First SDI MWD Lateral Survey</b>										
8,376.00	90.90	1.46	7,465.86	-19.59	1,239.45	-19.16	1.03	0.84	0.60	
8,469.00	90.07	0.90	7,465.07	73.39	1,241.37	73.82	1.08	-0.89	-0.60	
8,564.00	90.13	0.38	7,464.91	168.38	1,242.43	168.81	0.55	0.06	-0.55	
8,657.00	90.84	0.35	7,464.12	261.37	1,243.02	261.81	0.76	0.76	-0.03	
8,752.00	91.41	359.91	7,462.26	356.36	1,243.24	356.79	0.76	0.60	-0.46	
8,845.00	91.08	359.97	7,460.23	449.33	1,243.14	449.77	0.36	-0.35	0.06	
8,940.00	91.78	359.73	7,457.86	544.30	1,242.89	544.74	0.78	0.74	-0.25	
9,034.00	90.81	0.16	7,455.74	638.28	1,242.80	638.71	1.13	-1.03	0.46	
9,128.00	90.64	0.12	7,454.55	732.27	1,243.03	732.70	0.19	-0.18	-0.04	
9,222.00	91.07	359.13	7,453.15	826.26	1,242.42	826.69	1.15	0.46	-1.05	
9,316.00	90.81	359.66	7,451.61	920.24	1,241.43	920.67	0.63	-0.28	0.56	
9,410.00	90.30	0.57	7,450.69	1,014.23	1,241.61	1,014.66	1.11	-0.54	0.97	
9,505.00	91.08	0.97	7,449.55	1,109.21	1,242.89	1,109.65	0.92	0.82	0.42	
9,599.00	89.60	1.91	7,448.99	1,203.18	1,245.25	1,203.61	1.87	-1.57	1.00	
9,693.00	89.36	2.12	7,449.85	1,297.12	1,248.56	1,297.55	0.34	-0.26	0.22	
9,786.00	89.77	2.50	7,450.55	1,390.04	1,252.31	1,390.48	0.60	0.44	0.41	
9,879.00	90.07	1.35	7,450.68	1,482.98	1,255.43	1,483.42	1.28	0.32	-1.24	
9,973.00	91.24	1.77	7,449.61	1,576.94	1,257.99	1,577.38	1.32	1.24	0.45	
10,066.00	90.30	0.58	7,448.36	1,669.91	1,259.90	1,670.35	1.63	-1.01	-1.28	
10,159.00	90.54	359.90	7,447.68	1,762.91	1,260.28	1,763.35	0.78	0.26	-0.73	
10,254.00	91.41	359.74	7,446.06	1,857.89	1,259.99	1,858.33	0.93	0.92	-0.17	
10,348.00	90.10	359.43	7,444.82	1,951.88	1,259.31	1,952.32	1.43	-1.39	-0.33	
10,443.00	90.54	359.77	7,444.29	2,046.88	1,258.64	2,047.31	0.59	0.46	0.36	
10,537.00	90.44	0.36	7,443.49	2,140.87	1,258.75	2,141.31	0.64	-0.11	0.63	
10,631.00	90.70	0.72	7,442.55	2,234.86	1,259.63	2,235.30	0.47	0.28	0.38	
10,725.00	90.33	0.14	7,441.71	2,328.86	1,260.34	2,329.29	0.73	-0.39	-0.62	
10,820.00	91.14	0.46	7,440.49	2,423.85	1,260.84	2,424.29	0.92	0.85	0.34	
10,914.00	90.37	359.84	7,439.25	2,517.84	1,261.08	2,518.28	1.05	-0.82	-0.66	
11,009.00	91.34	359.14	7,437.83	2,612.82	1,260.24	2,613.26	1.26	1.02	-0.74	
11,103.00	89.73	358.80	7,436.95	2,706.80	1,258.55	2,707.24	1.75	-1.71	-0.36	
11,197.00	89.56	359.15	7,437.54	2,800.78	1,256.87	2,801.22	0.41	-0.18	0.37	
11,292.00	90.47	359.34	7,437.51	2,895.77	1,255.62	2,896.21	0.98	0.96	0.20	
11,386.00	91.34	359.54	7,436.03	2,989.75	1,254.70	2,990.19	0.95	0.93	0.21	
11,480.00	89.80	359.41	7,435.09	3,083.74	1,253.84	3,084.18	1.64	-1.64	-0.14	
11,574.00	90.40	359.55	7,434.93	3,177.74	1,252.98	3,178.17	0.66	0.64	0.15	
11,668.00	91.45	0.22	7,433.41	3,271.72	1,252.79	3,272.16	1.33	1.12	0.71	
11,761.00	90.81	359.51	7,431.58	3,364.70	1,252.57	3,365.14	1.03	-0.69	-0.76	
11,855.00	91.65	359.06	7,429.56	3,458.67	1,251.40	3,459.11	1.01	0.89	-0.48	
11,950.00	90.60	359.21	7,427.69	3,553.64	1,249.97	3,554.08	1.12	-1.11	0.16	
12,045.00	90.54	359.01	7,426.75	3,648.63	1,248.49	3,649.06	0.22	-0.06	-0.21	
12,139.00	90.70	359.00	7,425.73	3,742.61	1,246.86	3,743.04	0.17	0.17	-0.01	
12,234.00	90.90	359.32	7,424.40	3,837.59	1,245.47	3,838.02	0.40	0.21	0.34	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well Whiston 39C-33HZ
<b>Project:</b>	US Rockies Wattenberg Planning UTM83	<b>TVD Reference:</b>	GL 4905' & KB 20' @ 4925.00ft (Precision 461)
<b>Site:</b>	Whiston 4-7HZ Pad 2N-67W-4	<b>MD Reference:</b>	GL 4905' & KB 20' @ 4925.00ft (Precision 461)
<b>Well:</b>	Whiston 39C-33HZ	<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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
12,328.00	89.70	359.88	7,423.91	3,931.58	1,244.81	3,932.02	1.41	-1.28	0.60
12,421.00	89.76	0.02	7,424.35	4,024.58	1,244.73	4,025.02	0.16	0.06	0.15
12,516.00	89.97	0.52	7,424.57	4,119.58	1,245.18	4,120.01	0.57	0.22	0.53
12,611.00	89.83	0.66	7,424.74	4,214.57	1,246.16	4,215.01	0.21	-0.15	0.15
12,706.00	90.20	1.55	7,424.72	4,309.56	1,247.99	4,309.99	1.01	0.39	0.94
12,800.00	91.54	0.10	7,423.29	4,403.53	1,249.34	4,403.97	2.10	1.43	-1.54
12,894.00	90.50	359.03	7,421.61	4,497.51	1,248.63	4,497.95	1.59	-1.11	-1.14
12,988.00	91.24	357.88	7,420.19	4,591.46	1,246.09	4,591.90	1.45	0.79	-1.22
13,083.00	90.07	357.98	7,419.10	4,686.39	1,242.66	4,686.83	1.24	-1.23	0.11
13,177.00	90.60	357.11	7,418.55	4,780.30	1,238.64	4,780.74	1.08	0.56	-0.93
13,269.00	89.50	357.78	7,418.47	4,872.21	1,234.54	4,872.64	1.40	-1.20	0.73
13,363.00	89.97	357.20	7,418.91	4,966.12	1,230.42	4,966.55	0.79	0.50	-0.62
13,458.00	89.90	358.90	7,419.01	5,061.06	1,227.19	5,061.49	1.79	-0.07	1.79
13,553.00	90.84	359.40	7,418.40	5,156.05	1,225.78	5,156.47	1.12	0.99	0.53
13,571.00	91.11	359.17	7,418.09	5,174.04	1,225.55	5,174.47	1.97	1.50	-1.28
<b>Last SDI MWD Survey</b>									
13,625.00	91.11	359.17	7,417.05	5,228.03	1,224.77	5,228.45	0.00	0.00	0.00
<b>Projection to TD : 2673' FSL 370' FEL Sec 33</b>									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
150.00	150.00	0.23	0.32	First SDI MWD Survey
1,808.00	1,793.33	-104.00	134.09	Last SDI MWD Surface Survey
1,947.00	1,928.31	-122.77	161.37	First SDI MWD Production Survey
4,910.12	4,627.91	-842.52	1,118.92	Enter Land Box : 4910' MD 4627.91' TVD
7,040.00	6,738.59	-960.27	1,250.59	Curve KOP
7,052.00	6,750.58	-959.69	1,250.49	First SDI MWD Curve Survey
8,187.00	7,465.12	-208.52	1,235.37	Landing Point : 2673' FSL 346' FEL Sec 4
8,187.00	7,465.12	-208.52	1,235.37	Last SDI MWD Curve Survey
8,281.00	7,466.69	-114.56	1,237.51	First SDI MWD Lateral Survey
13,571.00	7,418.09	5,174.04	1,225.55	Last SDI MWD Survey
13,625.00	7,417.05	5,228.03	1,224.77	Projection to TD : 2673' FSL 370' FEL Sec 33

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