

WELL DETAILS: Chica 31C-23HZ

GL 4844' & KB 20' @ 4864.00ft (Precision 461) 4844.00
 Northing Easting Latitude Longitude
 14595347.16 1677799.14 40.1883460 -104.8661470

Design: OH (Chica 31C-23HZ/OH)

Created By: Seth Burstad Date: 5-08-2017

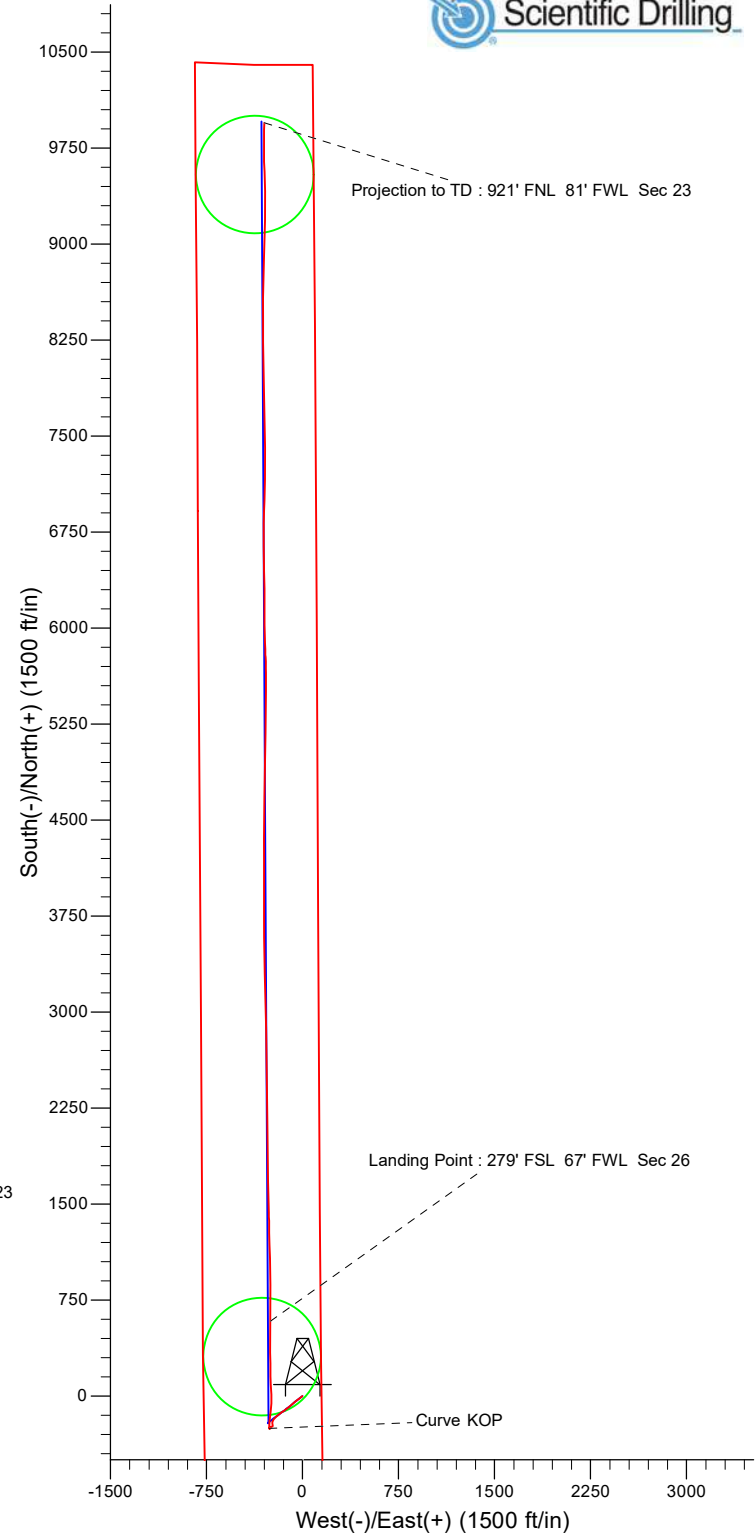
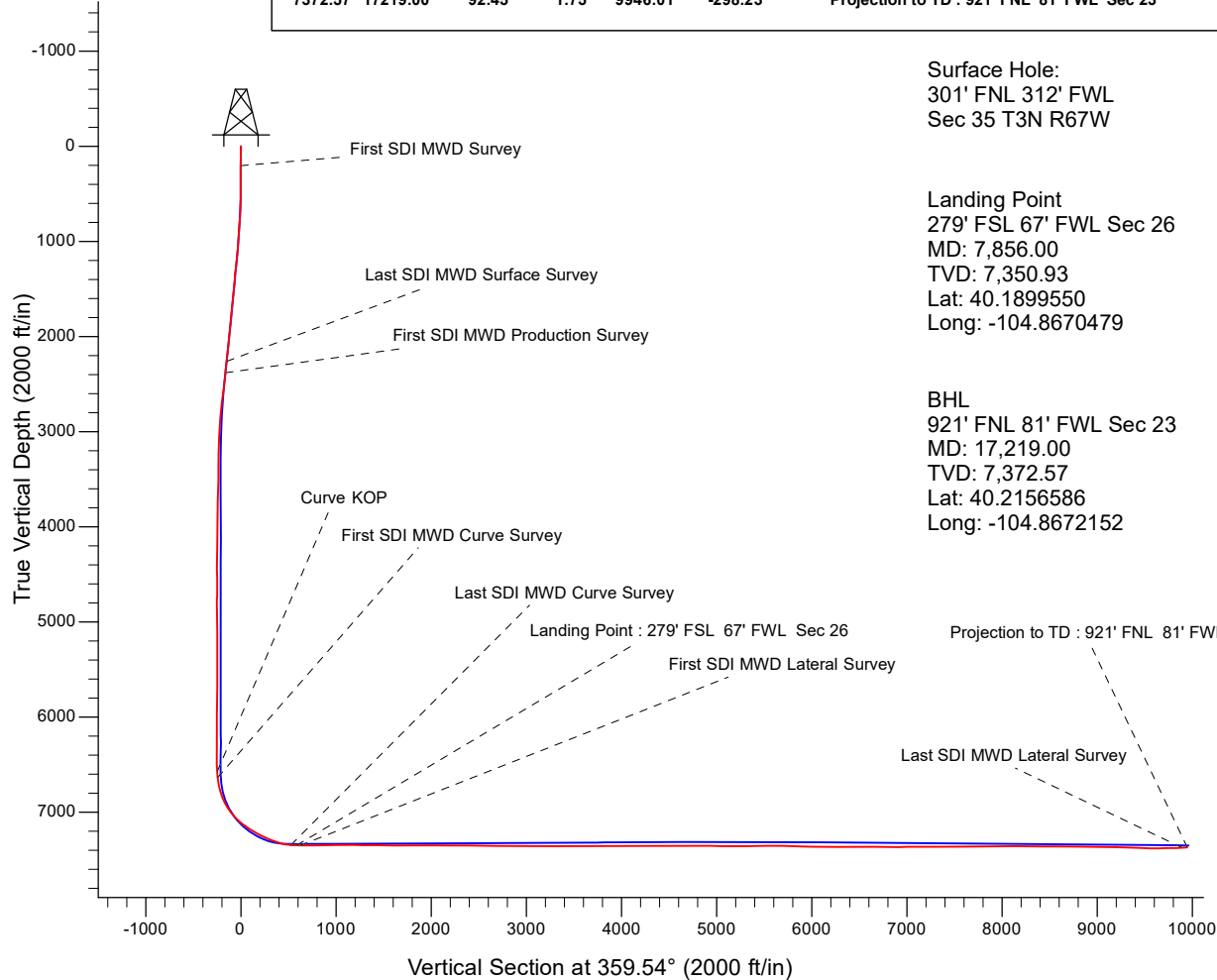
PROJECT DETAILS: US Rockies Wattenberg Planning UTM83

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
205.00	205.00	0.37	252.63	-0.20	-0.63	First SDI MWD Survey
2263.06	2281.00	10.91	232.33	-150.52	-194.09	Last SDI MWD Surface Survey
2380.25	2400.00	9.08	223.63	-164.20	-209.49	First SDI MWD Production Survey
6574.80	6600.00	2.33	339.84	-251.32	-259.64	Curve KOP
6639.62	6665.00	6.00	1.21	-246.68	-260.03	First SDI MWD Curve Survey
7346.79	7795.00	84.93	1.09	525.07	-252.47	Last SDI MWD Curve Survey
7350.93	7856.00	87.29	0.54	585.92	-251.60	Landing Point : 279' FSL 67' FWL Sec 26
7352.12	7889.00	88.56	0.25	618.89	-251.37	First SDI MWD Lateral Survey
7374.83	17166.00	92.45	1.75	9893.08	-299.85	Last SDI MWD Lateral Survey
7372.57	17219.00	92.45	1.75	9946.01	-298.23	Projection to TD : 921' FNL 81' FWL Sec 23





US ROCKIES REGION PLANNING

US Rockies Wattenberg Planning UTM83

Chica 4-35HZ Pad 3N-67W-35

Chica 31C-23HZ

OH

Design: OH

Standard Survey Report

08 May, 2017



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Chica 31C-23HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
Site:	Chica 4-35HZ Pad 3N-67W-35	MD Reference:	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
Well:	Chica 31C-23HZ	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	Chica 4-35HZ Pad 3N-67W-35, Site Center : Chica 4N2-23HZ		
Site Position:		Northing:	14,595,302.00 usft
From:	Lat/Long	Easting:	1,677,798.92 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Latitude:	40.1882220
		Longitude:	-104.8661480
		Grid Convergence:	0.09 °

Well	Chica 31C-23HZ, 301' FNL 312' FWL Sec 35 T3N R67W		
Well Position	+N/-S	0.00 ft	Northing: 14,595,347.16 usft
	+E/-W	0.00 ft	Easting: 1,677,799.14 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	0.00 ft
		Ground Level:	4,844.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2016	3/2/2017	8.44	66.70	52,301

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	359.54	

Survey Program	Date	5/8/2017			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
205.00	2,281.00	Survey #1 - Surface (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
2,400.00	17,219.00	Survey #2 - Production (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:Rockies, crustal dec + 3-axis correction	

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
205.00	0.37	252.63	205.00	-0.20	-0.63	-0.19	0.18	0.18	0.00
First SDI MWD Survey									
293.00	0.55	251.83	293.00	-0.41	-1.30	-0.40	0.20	0.20	-0.91
382.00	0.98	235.15	381.99	-0.98	-2.33	-0.96	0.54	0.48	-18.74
469.00	1.43	233.59	468.97	-2.05	-3.82	-2.02	0.52	0.52	-1.79
555.00	2.05	230.92	554.93	-3.66	-5.88	-3.61	0.73	0.72	-3.10
644.00	3.06	235.77	643.84	-6.00	-9.08	-5.93	1.16	1.13	5.45
733.00	4.30	232.97	732.65	-9.34	-13.70	-9.23	1.41	1.39	-3.15

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Chica 31C-23HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
Site:	Chica 4-35HZ Pad 3N-67W-35	MD Reference:	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
Well:	Chica 31C-23HZ	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)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
821.00	5.10	228.98	820.36	-13.90	-19.29	-13.74	0.98	0.91	-4.53
910.00	6.35	231.06	908.91	-19.59	-26.10	-19.38	1.42	1.40	2.34
999.00	7.12	233.12	997.30	-25.99	-34.34	-25.71	0.91	0.87	2.31
1,083.00	7.97	233.67	1,080.57	-32.57	-43.20	-32.22	1.02	1.01	0.65
1,170.00	8.74	230.66	1,166.65	-40.33	-53.17	-39.90	1.02	0.89	-3.46
1,257.00	9.62	229.89	1,252.53	-49.20	-63.84	-48.69	1.02	1.01	-0.89
1,345.00	9.35	229.05	1,339.33	-58.63	-74.86	-58.02	0.34	-0.31	-0.95
1,432.00	8.79	230.95	1,425.24	-67.45	-85.36	-66.76	0.73	-0.64	2.18
1,519.00	8.31	230.33	1,511.27	-75.65	-95.37	-74.88	0.56	-0.55	-0.71
1,605.00	8.27	233.80	1,596.37	-83.27	-105.14	-82.42	0.58	-0.05	4.03
1,694.00	9.10	232.75	1,684.35	-91.31	-115.91	-90.37	0.95	0.93	-1.18
1,781.00	9.57	230.90	1,770.20	-100.03	-127.00	-99.01	0.64	0.54	-2.13
1,870.00	8.69	228.39	1,858.07	-109.16	-137.77	-108.05	1.09	-0.99	-2.82
1,958.00	9.06	232.57	1,945.02	-117.79	-148.24	-116.60	0.84	0.42	4.75
2,045.00	9.75	236.60	2,030.85	-126.01	-159.83	-124.72	1.10	0.79	4.63
2,134.00	10.18	234.77	2,118.51	-134.69	-172.54	-133.30	0.60	0.48	-2.06
2,223.00	10.49	233.65	2,206.06	-144.03	-185.49	-142.54	0.42	0.35	-1.26
2,281.00	10.91	232.33	2,263.06	-150.52	-194.09	-148.95	0.84	0.72	-2.28
Last SDI MWD Surface Survey									
2,400.00	9.08	223.63	2,380.25	-164.20	-209.49	-162.51	1.99	-1.54	-7.31
First SDI MWD Production Survey									
2,494.00	8.51	222.97	2,473.15	-174.65	-219.35	-172.89	0.62	-0.61	-0.70
2,588.00	8.49	208.99	2,566.12	-185.81	-227.45	-183.98	2.19	-0.02	-14.87
2,682.00	7.21	201.45	2,659.24	-197.38	-232.97	-195.50	1.74	-1.36	-8.02
2,777.00	5.47	187.95	2,753.66	-207.41	-235.78	-205.51	2.40	-1.83	-14.21
2,870.00	4.41	171.55	2,846.32	-215.34	-235.86	-213.44	1.89	-1.14	-17.63
2,964.00	4.08	171.28	2,940.06	-222.22	-234.83	-220.32	0.35	-0.35	-0.29
3,057.00	3.44	169.30	3,032.86	-228.23	-233.81	-226.34	0.70	-0.69	-2.13
3,151.00	2.05	165.03	3,126.75	-232.62	-232.85	-230.75	1.49	-1.48	-4.54
3,245.00	2.34	212.11	3,220.69	-235.87	-233.43	-233.99	1.89	0.31	50.09
3,339.00	2.48	248.14	3,314.61	-238.26	-236.34	-236.35	1.59	0.15	38.33
3,432.00	2.72	264.22	3,407.52	-239.23	-240.41	-237.29	0.82	0.26	17.29
3,526.00	2.50	261.16	3,501.42	-239.77	-244.65	-237.80	0.28	-0.23	-3.26
3,621.00	1.35	209.22	3,596.37	-241.06	-247.24	-239.07	2.08	-1.21	-54.67
3,715.00	1.48	218.91	3,690.34	-242.97	-248.55	-240.97	0.29	0.14	10.31
3,810.00	1.38	229.13	3,785.31	-244.68	-250.18	-242.66	0.29	-0.11	10.76
3,903.00	1.75	227.62	3,878.28	-246.37	-252.08	-244.34	0.40	0.40	-1.62
3,998.00	1.67	229.54	3,973.24	-248.24	-254.20	-246.19	0.10	-0.08	2.02
4,093.00	0.67	243.28	4,068.22	-249.39	-255.75	-247.33	1.09	-1.05	14.46
4,186.00	1.35	249.18	4,161.20	-250.03	-257.26	-247.95	0.74	0.73	6.34

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Chica 31C-23HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
Site:	Chica 4-35HZ Pad 3N-67W-35	MD Reference:	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
Well:	Chica 31C-23HZ	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)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,281.00	1.23	238.66	4,256.18	-250.95	-259.18	-248.86	0.28	-0.13	-11.07
4,376.00	0.71	158.76	4,351.17	-252.03	-259.84	-249.94	1.38	-0.55	-84.11
4,471.00	0.17	38.59	4,446.16	-252.47	-259.54	-250.38	0.85	-0.57	-126.49
4,566.00	0.61	359.73	4,541.16	-251.86	-259.45	-249.76	0.52	0.46	-40.91
4,659.00	0.48	259.77	4,634.16	-251.43	-259.84	-249.34	0.90	-0.14	-107.48
4,753.00	0.63	221.53	4,728.15	-251.89	-260.57	-249.79	0.42	0.16	-40.68
4,847.00	2.25	90.11	4,822.13	-252.28	-259.06	-250.19	2.88	1.72	-139.81
4,942.00	2.42	78.72	4,917.05	-251.89	-255.23	-249.83	0.52	0.18	-11.99
5,037.00	1.90	78.71	5,011.99	-251.19	-251.72	-249.16	0.55	-0.55	-0.01
5,131.00	1.28	69.80	5,105.95	-250.52	-249.21	-248.51	0.71	-0.66	-9.48
5,253.00	0.93	53.03	5,227.93	-249.45	-247.14	-247.46	0.39	-0.29	-13.75
5,347.00	0.24	23.83	5,321.92	-248.81	-246.45	-246.83	0.78	-0.73	-31.06
5,440.00	0.34	282.00	5,414.92	-248.58	-246.64	-246.59	0.49	0.11	-109.49
5,533.00	0.48	247.50	5,507.92	-248.67	-247.27	-246.68	0.30	0.15	-37.10
5,628.00	0.72	239.99	5,602.91	-249.12	-248.15	-247.12	0.27	0.25	-7.91
5,722.00	0.98	243.14	5,696.90	-249.78	-249.38	-247.77	0.28	0.28	3.35
5,816.00	1.44	226.12	5,790.88	-250.96	-250.95	-248.94	0.62	0.49	-18.11
5,911.00	0.80	207.77	5,885.86	-252.38	-252.12	-250.34	0.76	-0.67	-19.32
6,005.00	0.37	218.52	5,979.86	-253.19	-252.61	-251.16	0.47	-0.46	11.44
6,100.00	0.36	266.64	6,074.86	-253.45	-253.10	-251.41	0.31	-0.01	50.65
6,195.00	0.50	282.46	6,169.86	-253.38	-253.81	-251.33	0.19	0.15	16.65
6,290.00	0.64	274.69	6,264.85	-253.25	-254.74	-251.19	0.17	0.15	-8.18
6,384.00	0.78	279.48	6,358.84	-253.10	-255.89	-251.04	0.16	0.15	5.10
6,478.00	1.06	290.37	6,452.83	-252.69	-257.34	-250.62	0.35	0.30	11.59
6,571.00	1.31	291.77	6,545.81	-252.00	-259.13	-249.91	0.27	0.27	1.51
6,600.00	2.33	339.84	6,574.80	-251.32	-259.64	-249.23	6.04	3.52	165.74
Curve KOP									
6,665.00	6.00	1.21	6,639.62	-246.68	-260.03	-244.59	6.04	5.65	32.88
First SDI MWD Curve Survey									
6,758.00	13.92	2.90	6,731.14	-230.63	-259.36	-228.54	8.52	8.52	1.82
6,853.00	20.05	1.79	6,821.96	-202.91	-258.27	-200.83	6.46	6.45	-1.17
6,947.00	27.09	8.29	6,908.07	-165.57	-254.68	-163.52	7.97	7.49	6.91
7,040.00	35.55	6.15	6,987.45	-117.65	-248.72	-115.65	9.17	9.10	-2.30
7,134.00	44.87	3.92	7,059.16	-57.26	-243.51	-55.31	10.03	9.91	-2.37
7,229.00	50.49	357.00	7,123.14	12.87	-243.14	14.82	7.99	5.92	-7.28
7,323.00	57.37	356.32	7,178.45	88.67	-247.58	90.66	7.34	7.32	-0.72
7,418.00	61.99	359.79	7,226.41	170.59	-250.30	172.60	5.79	4.86	3.65
7,512.00	64.88	359.15	7,268.44	254.66	-251.09	256.66	3.13	3.07	-0.68
7,606.00	70.00	358.90	7,304.50	341.42	-252.57	343.44	5.45	5.45	-0.27
7,701.00	76.64	0.04	7,331.75	432.37	-253.39	434.39	7.08	6.99	1.20
7,795.00	84.93	1.09	7,346.79	525.07	-252.47	527.08	8.89	8.82	1.12

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Well:	Chica 31C-23HZ	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)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Last SDI MWD Curve Survey									
7,856.00	87.29	0.54	7,350.93	585.92	-251.60	587.92	3.96	3.86	-0.89
Landing Point : 279' FSL 67' FWL Sec 26									
7,889.00	88.56	0.25	7,352.13	618.89	-251.37	620.89	3.96	3.86	-0.89
First SDI MWD Lateral Survey									
7,983.00	90.27	359.82	7,353.08	712.88	-251.32	714.88	1.88	1.82	-0.46
8,077.00	91.84	0.44	7,351.35	806.87	-251.10	808.86	1.80	1.67	0.66
8,171.00	91.88	359.65	7,348.30	900.81	-251.03	902.80	0.84	0.04	-0.84
8,265.00	91.07	359.07	7,345.88	994.78	-252.08	996.77	1.06	-0.86	-0.62
8,357.00	89.50	358.44	7,345.43	1,086.75	-254.08	1,088.76	1.84	-1.71	-0.68
8,452.00	89.46	357.78	7,346.29	1,181.69	-257.21	1,183.72	0.70	-0.04	-0.69
8,546.00	89.30	358.54	7,347.31	1,275.64	-260.23	1,277.69	0.83	-0.17	0.81
8,641.00	89.80	358.92	7,348.05	1,370.61	-262.33	1,372.67	0.66	0.53	0.40
8,735.00	88.22	357.31	7,349.68	1,464.54	-265.42	1,466.63	2.40	-1.68	-1.71
8,830.00	88.96	358.71	7,352.01	1,559.45	-268.72	1,561.56	1.67	0.78	1.47
8,924.00	90.07	359.69	7,352.81	1,653.44	-270.03	1,655.55	1.58	1.18	1.04
9,018.00	90.94	0.17	7,351.98	1,747.43	-270.15	1,749.55	1.06	0.93	0.51
9,114.00	89.77	0.04	7,351.39	1,843.43	-269.97	1,845.54	1.23	-1.22	-0.14
9,207.00	90.13	359.01	7,351.47	1,936.42	-270.74	1,938.54	1.17	0.39	-1.11
9,302.00	88.86	358.03	7,352.30	2,031.39	-273.20	2,033.51	1.69	-1.34	-1.03
9,395.00	89.13	359.21	7,353.94	2,124.34	-275.44	2,126.49	1.30	0.29	1.27
9,489.00	91.04	359.87	7,353.80	2,218.34	-276.19	2,220.48	2.15	2.03	0.70
9,583.00	91.01	359.73	7,352.11	2,312.32	-276.52	2,314.46	0.15	-0.03	-0.15
9,678.00	88.46	358.75	7,352.55	2,407.30	-277.78	2,409.45	2.88	-2.68	-1.03
9,772.00	89.23	359.14	7,354.45	2,501.27	-279.51	2,503.43	0.92	0.82	0.41
9,866.00	90.84	359.35	7,354.39	2,595.25	-280.75	2,597.42	1.73	1.71	0.22
9,961.00	89.90	359.38	7,353.78	2,690.24	-281.80	2,692.42	0.99	-0.99	0.03
10,055.00	89.03	358.95	7,354.66	2,784.23	-283.17	2,786.41	1.03	-0.93	-0.46
10,150.00	90.91	359.15	7,354.71	2,879.21	-284.75	2,881.41	1.99	1.98	0.21
10,245.00	88.96	358.07	7,354.81	2,974.18	-287.05	2,976.39	2.35	-2.05	-1.14
10,340.00	87.98	357.67	7,357.35	3,069.08	-290.58	3,071.31	1.11	-1.03	-0.42
10,434.00	89.09	358.81	7,359.75	3,163.00	-293.47	3,165.25	1.69	1.18	1.21
10,528.00	90.07	359.12	7,360.44	3,256.98	-295.16	3,259.25	1.09	1.04	0.33
10,621.00	90.84	359.87	7,359.70	3,349.97	-295.98	3,352.24	1.16	0.83	0.81
10,715.00	90.23	359.50	7,358.83	3,443.97	-296.50	3,446.24	0.76	-0.65	-0.39
10,808.00	90.94	359.54	7,357.88	3,536.96	-297.28	3,539.23	0.76	0.76	0.04
10,900.00	89.80	359.77	7,357.28	3,628.95	-297.83	3,631.23	1.26	-1.24	0.25
10,993.00	90.64	359.15	7,356.92	3,721.95	-298.71	3,724.22	1.12	0.90	-0.67
11,085.00	89.90	359.92	7,356.49	3,813.94	-299.46	3,816.22	1.16	-0.80	0.84
11,178.00	90.03	0.01	7,356.55	3,906.94	-299.51	3,909.22	0.17	0.14	0.10

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Chica 31C-23HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
Site:	Chica 4-35HZ Pad 3N-67W-35	MD Reference:	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
Well:	Chica 31C-23HZ	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)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,272.00	90.47	359.82	7,356.14	4,000.94	-299.65	4,003.22	0.51	0.47	-0.20
11,365.00	91.11	0.17	7,354.86	4,093.93	-299.66	4,096.20	0.78	0.69	0.38
11,460.00	89.73	359.76	7,354.16	4,188.93	-299.72	4,191.20	1.52	-1.45	-0.43
11,553.00	90.13	359.39	7,354.27	4,281.92	-300.41	4,284.20	0.59	0.43	-0.40
11,647.00	89.19	0.24	7,354.83	4,375.92	-300.71	4,378.19	1.35	-1.00	0.90
11,741.00	89.50	0.56	7,355.91	4,469.91	-300.06	4,472.17	0.47	0.33	0.34
11,836.00	90.03	0.91	7,356.29	4,564.90	-298.84	4,567.15	0.67	0.56	0.37
11,930.00	90.13	0.57	7,356.16	4,658.89	-297.62	4,661.13	0.38	0.11	-0.36
12,024.00	90.40	0.76	7,355.73	4,752.88	-296.53	4,755.11	0.35	0.29	0.20
12,118.00	90.67	1.09	7,354.85	4,846.87	-295.01	4,849.08	0.45	0.29	0.35
12,212.00	88.86	0.20	7,355.24	4,940.86	-293.96	4,943.06	2.15	-1.93	-0.95
12,307.00	89.26	0.15	7,356.80	5,035.84	-293.67	5,038.04	0.42	0.42	-0.05
12,401.00	89.93	1.41	7,357.46	5,129.83	-292.39	5,132.01	1.52	0.71	1.34
12,496.00	90.54	2.01	7,357.07	5,224.79	-289.55	5,226.94	0.90	0.64	0.63
12,590.00	89.93	1.39	7,356.68	5,318.74	-286.76	5,320.87	0.93	-0.65	-0.66
12,685.00	90.10	0.16	7,356.66	5,413.73	-285.48	5,415.85	1.31	0.18	-1.29
12,779.00	90.57	0.12	7,356.11	5,507.73	-285.25	5,509.84	0.50	0.50	-0.04
12,874.00	90.94	0.38	7,354.86	5,602.72	-284.83	5,604.83	0.48	0.39	0.27
12,967.00	88.39	358.64	7,355.40	5,695.70	-285.63	5,697.81	3.32	-2.74	-1.87
13,061.00	86.78	356.47	7,359.36	5,789.53	-289.63	5,791.67	2.87	-1.71	-2.31
13,154.00	87.92	358.03	7,363.66	5,882.32	-294.09	5,884.49	2.08	1.23	1.68
13,248.00	88.89	358.86	7,366.28	5,976.24	-296.64	5,978.43	1.36	1.03	0.88
13,342.00	89.83	359.86	7,367.33	6,070.23	-297.69	6,072.42	1.46	1.00	1.06
13,436.00	91.61	1.49	7,366.15	6,164.21	-296.58	6,166.39	2.57	1.89	1.73
13,530.00	89.97	359.57	7,364.85	6,258.19	-295.71	6,260.36	2.69	-1.74	-2.04
13,624.00	89.80	358.57	7,365.04	6,352.17	-297.24	6,354.36	1.08	-0.18	-1.06
13,719.00	90.24	358.72	7,365.01	6,447.15	-299.49	6,449.34	0.49	0.46	0.16
13,813.00	88.79	358.94	7,365.80	6,541.12	-301.41	6,543.33	1.56	-1.54	0.23
13,906.00	89.30	359.58	7,367.35	6,634.10	-302.61	6,636.32	0.88	0.55	0.69
13,999.00	90.00	0.26	7,367.92	6,727.10	-302.74	6,729.31	1.05	0.75	0.73
14,092.00	91.38	1.09	7,366.80	6,820.08	-301.64	6,822.28	1.73	1.48	0.89
14,186.00	89.56	0.88	7,366.03	6,914.06	-300.03	6,916.25	1.95	-1.94	-0.22
14,279.00	90.67	1.76	7,365.84	7,007.03	-297.88	7,009.20	1.52	1.19	0.95
14,373.00	90.47	1.42	7,364.91	7,100.99	-295.27	7,103.13	0.42	-0.21	-0.36
14,467.00	90.03	0.79	7,364.50	7,194.97	-293.46	7,197.10	0.82	-0.47	-0.67
14,560.00	89.90	0.15	7,364.56	7,287.97	-292.70	7,290.08	0.70	-0.14	-0.69
14,655.00	89.60	359.51	7,364.97	7,382.97	-292.98	7,385.08	0.74	-0.32	-0.67
14,750.00	90.03	359.38	7,365.28	7,477.96	-293.90	7,480.08	0.47	0.45	-0.14
14,843.00	90.67	359.63	7,364.71	7,570.96	-294.70	7,573.08	0.74	0.69	0.27
14,938.00	90.27	358.68	7,363.93	7,665.94	-296.11	7,668.07	1.08	-0.42	-1.00

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Chica 31C-23HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
Site:	Chica 4-35HZ Pad 3N-67W-35	MD Reference:	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
Well:	Chica 31C-23HZ	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)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
15,033.00	90.84	358.57	7,363.01	7,760.91	-298.39	7,763.05	0.61	0.60	-0.12	
15,128.00	90.20	358.94	7,362.15	7,855.88	-300.45	7,858.04	0.78	-0.67	0.39	
15,222.00	90.27	358.43	7,361.76	7,949.86	-302.61	7,952.03	0.55	0.07	-0.54	
15,316.00	89.73	359.01	7,361.76	8,043.83	-304.71	8,046.02	0.84	-0.57	0.62	
15,410.00	90.44	359.48	7,361.62	8,137.82	-305.94	8,140.02	0.91	0.76	0.50	
15,505.00	89.40	359.29	7,361.75	8,232.82	-306.96	8,235.01	1.11	-1.09	-0.20	
15,600.00	89.56	359.42	7,362.62	8,327.81	-308.03	8,330.01	0.22	0.17	0.14	
15,694.00	89.93	0.18	7,363.04	8,421.80	-308.36	8,424.01	0.90	0.39	0.81	
15,789.00	90.44	0.34	7,362.73	8,516.80	-307.93	8,519.00	0.56	0.54	0.17	
15,883.00	88.89	0.38	7,363.28	8,610.80	-307.34	8,612.99	1.65	-1.65	0.04	
15,976.00	89.13	0.58	7,364.88	8,703.78	-306.56	8,705.96	0.34	0.26	0.22	
16,069.00	89.66	1.07	7,365.87	8,796.76	-305.22	8,798.93	0.78	0.57	0.53	
16,162.00	90.24	2.12	7,365.95	8,889.72	-302.63	8,891.87	1.29	0.62	1.13	
16,257.00	89.70	2.35	7,366.00	8,984.65	-298.93	8,986.76	0.62	-0.57	0.24	
16,351.00	89.33	2.01	7,366.79	9,078.58	-295.35	9,080.66	0.53	-0.39	-0.36	
16,446.00	88.93	1.04	7,368.24	9,173.53	-292.83	9,175.59	1.10	-0.42	-1.02	
16,541.00	87.98	0.34	7,370.80	9,268.49	-291.68	9,270.53	1.24	-1.00	-0.74	
16,636.00	87.58	359.30	7,374.48	9,363.42	-291.98	9,365.46	1.17	-0.42	-1.09	
16,729.00	87.75	358.21	7,378.27	9,456.32	-294.00	9,458.37	1.19	0.18	-1.17	
16,823.00	89.03	358.15	7,380.91	9,550.23	-296.98	9,552.31	1.36	1.36	-0.06	
16,917.00	90.74	358.83	7,381.10	9,644.19	-299.46	9,646.29	1.96	1.82	0.72	
17,010.00	91.18	359.32	7,379.54	9,737.17	-300.96	9,739.27	0.71	0.47	0.53	
17,105.00	91.78	0.55	7,377.08	9,832.13	-301.07	9,834.23	1.44	0.63	1.29	
17,166.00	92.45	1.75	7,374.83	9,893.08	-299.85	9,895.17	2.25	1.10	1.97	
Last SDI MWD Lateral Survey										
17,219.00	92.45	1.75	7,372.57	9,946.01	-298.23	9,948.08	0.00	0.00	0.00	
Projection to TD : 921' FNL 81' FWL Sec 23										

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Chica 31C-23HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
Site:	Chica 4-35HZ Pad 3N-67W-35	MD Reference:	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
Well:	Chica 31C-23HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales Office

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
205.00	205.00	-0.20	-0.63	First SDI MWD Survey	
2,281.00	2,263.06	-150.52	-194.09	Last SDI MWD Surface Survey	
2,400.00	2,380.25	-164.20	-209.49	First SDI MWD Production Survey	
6,600.00	6,574.80	-251.32	-259.64	Curve KOP	
6,665.00	6,639.62	-246.68	-260.03	First SDI MWD Curve Survey	
7,795.00	7,346.79	525.07	-252.47	Last SDI MWD Curve Survey	
7,856.00	7,350.93	585.92	-251.60	Landing Point : 279' FSL 67' FWL Sec 26	
7,889.00	7,352.13	618.89	-251.37	First SDI MWD Lateral Survey	
17,166.00	7,374.83	9,893.08	-299.85	Last SDI MWD Lateral Survey	
17,219.00	7,372.57	9,946.01	-298.23	Projection to TD : 921' FNL 81' FWL Sec 23	

Checked By: _____	Approved By: _____	Date: _____
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