

#### WELL DETAILS: Chica 4N2-23HZ

GL 4844' & KB 20' @ 4864.00ft (Precision 461) 4844.00  
 Northing 14595302.01 Easting 1677798.93 Latitude 40.1862220 Longitude -104.8661480

Design: OH (Chica 4N2-23HZ/OH)

Created By: Seth Burstad Date: 4-25-2017

#### 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

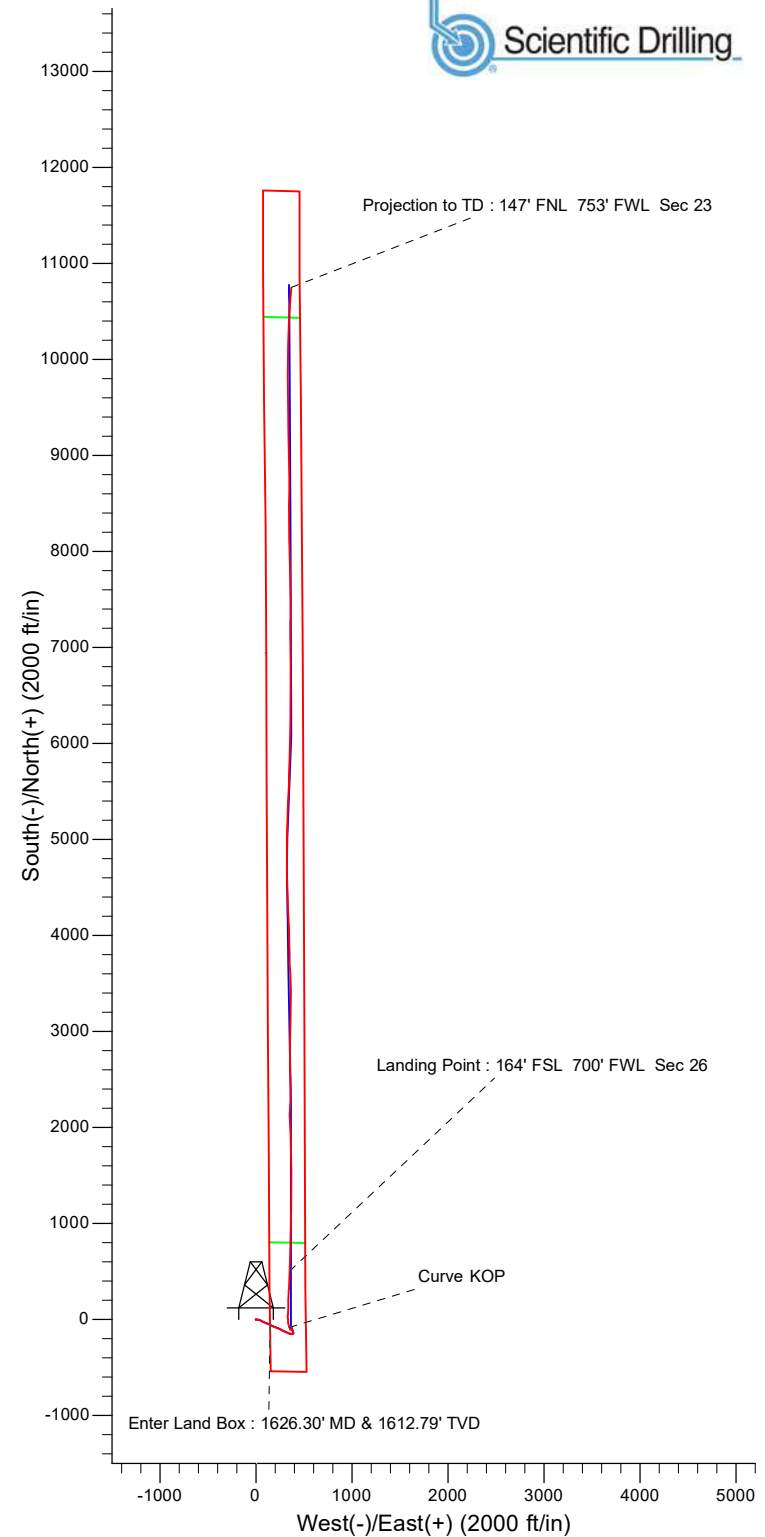
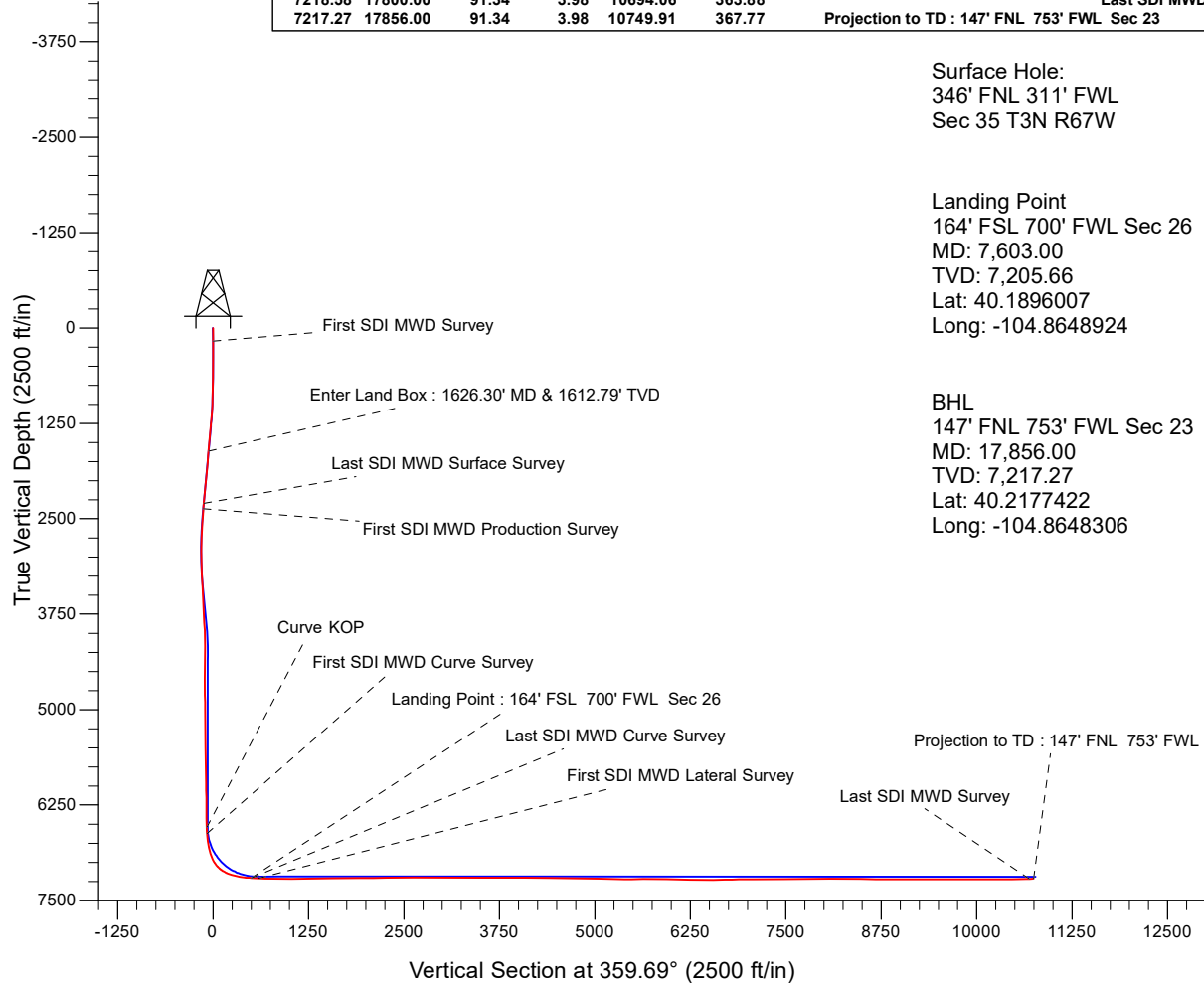
#### ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Annotation
174.00	174.00	0.30	302.55	0.25	-0.38	First SDI MWD Survey
1612.79	1626.30	11.90	113.83	-57.00	149.64	Enter Land Box : 1626.30' MD & 1612.79' TVD
2301.85	2332.00	10.77	115.82	-119.86	287.87	Last SDI MWD Surface Survey
2369.70	2401.00	10.20	115.49	-125.30	299.19	First SDI MWD Production Survey
6542.74	6582.00	1.82	331.90	-81.88	346.54	Curve KOP
6624.52	6664.00	6.27	354.09	-76.28	345.47	First SDI MWD Curve Survey
7205.66	7603.00	87.04	2.33	502.03	350.66	Landing Point : 164' FSL 700' FWL Sec 26
7205.66	7603.00	87.04	2.33	502.03	350.66	Last SDI MWD Curve Survey
7209.89	7698.00	87.85	2.65	596.85	354.79	First SDI MWD Lateral Survey
7218.58	17800.00	91.34	3.98	10694.06	363.88	Last SDI MWD Survey
7217.27	17856.00	91.34	3.98	10749.91	367.77	Projection to TD : 147' FNL 753' FWL Sec 23

Surface Hole:  
 346' FNL 311' FWL  
 Sec 35 T3N R67W

Landing Point  
 164' FSL 700' FWL Sec 26  
 MD: 7,603.00  
 TVD: 7,205.66  
 Lat: 40.1896007  
 Long: -104.8648924

BHL  
 147' FNL 753' FWL Sec 23  
 MD: 17,856.00  
 TVD: 7,217.27  
 Lat: 40.2177422  
 Long: -104.8648306





# **US ROCKIES REGION PLANNING**

**US Rockies Wattenberg Planning UTM83**

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

**Chica 4N2-23HZ**

**OH**

**Design: OH**

## **Standard Survey Report**

**25 April, 2017**



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

Well	Chica 4N2-23HZ, 346' FNL 311' FWL Sec 35 T3N R67W					
Well Position	+N/-S	0.00 ft	Northing:	14,595,302.00 usft	Latitude:	40.1882220
	+E/-W	0.00 ft	Easting:	1,677,798.92 usft	Longitude:	-104.8661480
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,844.00 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	3/2/2017	8.44	66.70	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	359.69	

<b>Survey Program</b>	<b>Date</b>	4/25/2017			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
174.00	2,332.00	Survey #1 - Surface (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
2,401.00	17,856.00	Survey #2 - Production (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:Rockies, crustal dec + 3-axis correction	

<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	
174.00	0.30	302.55	174.00	0.25	-0.38	0.25	0.17	0.17	0.00	
<b>First SDI MWD Survey</b>										
205.00	0.31	314.57	205.00	0.35	-0.51	0.35	0.21	0.03	38.77	
294.00	0.36	128.13	294.00	0.34	-0.46	0.35	0.75	0.06	195.01	
383.00	0.87	88.48	382.99	0.19	0.43	0.19	0.71	0.57	-44.55	
469.00	1.74	90.50	468.97	0.20	2.39	0.18	1.01	1.01	2.35	
556.00	2.44	88.27	555.91	0.24	5.56	0.21	0.81	0.80	-2.56	
645.00	3.11	89.52	644.81	0.32	9.87	0.26	0.76	0.75	1.40	
733.00	3.93	99.95	732.64	-0.18	15.23	-0.27	1.18	0.93	11.85	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well Chica 4N2-23HZ
<b>Project:</b>	US Rockies Wattenberg Planning UTM83	<b>TVD Reference:</b>	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
<b>Site:</b>	Chica 4-35HZ Pad 3N-67W-35	<b>MD Reference:</b>	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
<b>Well:</b>	Chica 4N2-23HZ	<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)
822.00	5.02	104.99	821.37	-1.72	21.99	-1.84	1.30	1.22	5.66
911.00	6.14	107.53	909.95	-4.16	30.29	-4.32	1.29	1.26	2.85
999.00	7.89	109.85	997.28	-7.63	40.46	-7.85	2.01	1.99	2.64
1,084.00	8.64	114.04	1,081.40	-12.21	51.78	-12.49	1.13	0.88	4.93
1,171.00	9.90	115.05	1,167.26	-18.04	64.53	-18.39	1.46	1.45	1.16
1,257.00	11.12	114.92	1,251.82	-24.66	78.74	-25.09	1.42	1.42	-0.15
1,346.00	12.25	114.93	1,338.97	-32.26	95.09	-32.77	1.27	1.27	0.01
1,433.00	13.08	113.87	1,423.86	-40.13	112.46	-40.74	0.99	0.95	-1.22
1,519.00	12.11	114.94	1,507.78	-47.88	129.54	-48.58	1.16	-1.13	1.24
1,606.00	11.67	114.07	1,592.92	-55.31	145.85	-56.10	0.55	-0.51	-1.00
1,626.30	11.90	113.83	1,612.79	-57.00	149.64	-57.80	1.14	1.11	-1.17
Enter Land Box : 1626.30' MD & 1612.79' TVD									
1,695.00	12.66	113.09	1,679.92	-62.81	163.04	-63.69	1.14	1.11	-1.08
1,781.00	13.31	112.55	1,763.72	-70.30	180.85	-71.28	0.77	0.76	-0.63
1,870.00	13.58	112.09	1,850.28	-78.16	200.00	-79.24	0.33	0.30	-0.52
1,959.00	12.31	111.37	1,937.02	-85.55	218.51	-86.73	1.44	-1.43	-0.81
2,046.00	12.73	113.66	2,021.95	-92.77	235.93	-94.05	0.75	0.48	2.63
2,135.00	12.85	117.47	2,108.74	-101.27	253.69	-102.64	0.96	0.13	4.28
2,223.00	11.06	120.12	2,194.83	-110.02	269.68	-111.48	2.13	-2.03	3.01
2,312.00	10.88	117.44	2,282.20	-118.18	284.52	-119.72	0.61	-0.20	-3.01
2,332.00	10.77	115.82	2,301.85	-119.86	287.87	-121.42	1.62	-0.55	-8.10
Last SDI MWD Surface Survey									
2,401.00	10.20	115.49	2,369.70	-125.30	299.19	-126.92	0.83	-0.83	-0.48
First SDI MWD Production Survey									
2,495.00	8.48	113.67	2,462.45	-131.66	313.05	-133.36	1.86	-1.83	-1.94
2,589.00	7.70	114.47	2,555.51	-137.06	325.13	-138.81	0.84	-0.83	0.85
2,684.00	8.11	113.89	2,649.61	-142.41	337.05	-144.23	0.44	0.43	-0.61
2,778.00	7.96	106.56	2,742.69	-146.95	349.36	-148.83	1.10	-0.16	-7.80
2,871.00	7.19	101.62	2,834.88	-149.95	361.23	-151.91	1.08	-0.83	-5.31
2,965.00	5.41	90.92	2,928.31	-151.21	371.42	-153.22	2.26	-1.89	-11.38
3,058.00	4.90	77.53	3,020.93	-150.42	379.68	-152.47	1.40	-0.55	-14.40
3,153.00	3.74	61.17	3,115.67	-148.05	386.36	-150.14	1.77	-1.22	-17.22
3,246.00	2.95	24.73	3,208.52	-144.42	390.02	-146.52	2.39	-0.85	-39.18
3,340.00	3.16	349.96	3,302.39	-139.67	390.58	-141.78	1.95	0.22	-36.99
3,433.00	3.03	333.20	3,395.26	-134.95	389.02	-137.05	0.98	-0.14	-18.02
3,527.00	2.74	331.70	3,489.14	-130.75	386.84	-132.84	0.32	-0.31	-1.60
3,622.00	3.05	330.87	3,584.02	-126.55	384.53	-128.62	0.33	0.33	-0.87
3,717.00	3.82	332.17	3,678.85	-121.54	381.82	-123.60	0.81	0.81	1.37
3,811.00	3.68	335.05	3,772.64	-116.04	379.09	-118.08	0.25	-0.15	3.06
3,904.00	3.48	329.86	3,865.46	-110.89	376.41	-112.92	0.41	-0.22	-5.58
3,999.00	3.19	318.75	3,960.30	-106.41	373.22	-108.43	0.74	-0.31	-11.69
4,094.00	2.45	302.44	4,055.19	-103.33	369.77	-105.33	1.14	-0.78	-17.17
4,187.00	2.06	274.12	4,148.12	-102.14	366.42	-104.13	1.25	-0.42	-30.45
4,283.00	1.52	233.92	4,244.08	-102.77	363.67	-104.74	1.39	-0.56	-41.88

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<b>Site:</b>	Chica 4-35HZ Pad 3N-67W-35	<b>MD Reference:</b>	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
<b>Well:</b>	Chica 4N2-23HZ	<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)
4,377.00	1.43	226.30	4,338.05	-104.32	361.82	-106.27	0.23	-0.10	-8.11
4,472.00	1.14	294.36	4,433.03	-104.74	360.10	-106.69	1.53	-0.31	71.64
4,567.00	1.21	286.52	4,528.01	-104.07	358.28	-106.01	0.18	0.07	-8.25
4,660.00	0.45	281.74	4,621.00	-103.72	356.98	-105.65	0.82	-0.82	-5.14
4,754.00	0.86	243.86	4,714.99	-103.95	355.98	-105.88	0.61	0.44	-40.30
4,849.00	0.57	348.05	4,809.99	-103.80	355.24	-105.72	1.20	-0.31	109.67
4,943.00	0.91	351.58	4,903.98	-102.61	355.04	-104.53	0.36	0.36	3.76
5,038.00	0.64	340.97	4,998.97	-101.36	354.75	-103.28	0.32	-0.28	-11.17
5,133.00	0.81	40.25	5,093.96	-100.35	355.02	-102.26	0.77	0.18	62.40
5,252.00	0.78	29.46	5,212.95	-99.00	355.96	-100.92	0.13	-0.03	-9.07
5,346.00	0.69	11.36	5,306.94	-97.89	356.38	-99.81	0.26	-0.10	-19.26
5,439.00	0.55	355.52	5,399.94	-96.89	356.46	-98.82	0.24	-0.15	-17.03
5,532.00	0.63	6.53	5,492.93	-95.94	356.48	-97.87	0.15	0.09	11.84
5,627.00	0.84	13.54	5,587.92	-94.74	356.70	-96.67	0.24	0.22	7.38
5,721.00	1.11	6.67	5,681.91	-93.17	356.97	-95.10	0.31	0.29	-7.31
5,815.00	1.57	352.30	5,775.89	-90.99	356.91	-92.92	0.60	0.49	-15.29
5,910.00	1.21	345.16	5,870.86	-88.73	356.47	-90.66	0.42	-0.38	-7.52
6,004.00	0.95	322.34	5,964.84	-87.15	355.74	-89.08	0.53	-0.28	-24.28
6,099.00	1.03	307.15	6,059.83	-86.01	354.58	-87.93	0.29	0.08	-15.99
6,194.00	1.02	290.21	6,154.81	-85.21	353.11	-87.12	0.32	-0.01	-17.83
6,289.00	1.05	289.33	6,249.80	-84.63	351.49	-86.53	0.04	0.03	-0.93
6,383.00	1.08	287.61	6,343.78	-84.07	349.84	-85.96	0.05	0.03	-1.83
6,477.00	1.10	300.46	6,437.76	-83.35	348.21	-85.23	0.26	0.02	13.67
6,570.00	1.28	316.20	6,530.74	-82.15	346.73	-84.02	0.40	0.19	16.92
6,582.00	1.82	331.90	6,542.74	-81.88	346.54	-83.75	5.66	4.47	130.81
Curve KOP									
6,664.00	6.27	354.09	6,624.52	-76.28	345.47	-78.15	5.66	5.43	27.06
First SDI MWD Curve Survey									
6,757.00	7.91	347.23	6,716.81	-64.98	343.53	-66.84	1.98	1.76	-7.38
6,852.00	12.51	346.72	6,810.28	-48.59	339.72	-50.42	4.84	4.84	-0.54
6,946.00	17.27	350.79	6,901.10	-24.89	335.15	-26.70	5.18	5.06	4.33
7,039.00	28.28	357.68	6,986.73	10.87	332.04	9.07	12.16	11.84	7.41
7,133.00	43.92	2.78	7,062.46	66.03	332.72	64.23	16.93	16.64	5.43
7,226.00	59.71	2.71	7,119.77	138.82	336.20	137.00	16.98	16.98	-0.08
7,321.00	71.16	1.28	7,159.20	225.02	339.16	223.18	12.13	12.05	-1.51
7,415.00	78.82	2.75	7,183.53	315.69	342.37	313.83	8.29	8.15	1.56
7,509.00	83.54	2.56	7,197.94	408.45	346.67	406.57	5.03	5.02	-0.20
7,603.00	87.04	2.33	7,205.66	502.03	350.66	500.13	3.73	3.72	-0.24
Landing Point : 164' FSL 700' FWL Sec 26 - Last SDI MWD Curve Survey									
7,698.00	87.85	2.65	7,209.89	596.85	354.79	594.92	0.92	0.85	0.34
First SDI MWD Lateral Survey									
7,792.00	88.36	1.72	7,213.00	690.73	358.37	688.78	1.13	0.54	-0.99
7,886.00	87.75	1.36	7,216.19	784.64	360.89	782.67	0.75	-0.65	-0.38
7,980.00	89.16	1.25	7,218.72	878.58	363.03	876.60	1.50	1.50	-0.12

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<b>Well:</b>	Chica 4N2-23HZ	<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)
8,074.00	90.60	0.95	7,218.92	972.56	364.84	970.57	1.56	1.53	-0.32
8,169.00	91.58	1.11	7,217.11	1,067.52	366.55	1,065.53	1.05	1.03	0.17
8,262.00	89.33	0.16	7,216.37	1,160.51	367.58	1,158.50	2.63	-2.42	-1.02
8,354.00	90.30	0.71	7,216.67	1,252.50	368.27	1,250.49	1.21	1.05	0.60
8,449.00	90.94	1.21	7,215.64	1,347.48	369.87	1,345.46	0.85	0.67	0.53
8,543.00	91.41	0.56	7,213.72	1,441.45	371.32	1,439.42	0.85	0.50	-0.69
8,638.00	91.71	0.27	7,211.13	1,536.41	372.01	1,534.38	0.44	0.32	-0.31
8,732.00	91.85	359.11	7,208.21	1,630.37	371.50	1,628.33	1.24	0.15	-1.23
8,827.00	89.26	357.18	7,207.29	1,725.30	368.42	1,723.28	3.40	-2.73	-2.03
8,921.00	90.60	357.57	7,207.40	1,819.20	364.12	1,817.20	1.48	1.43	0.41
9,016.00	89.90	358.14	7,206.99	1,914.13	360.56	1,912.15	0.95	-0.74	0.60
9,111.00	91.21	357.98	7,206.07	2,009.07	357.35	2,007.11	1.39	1.38	-0.17
9,204.00	89.90	358.40	7,205.17	2,102.02	354.41	2,100.07	1.48	-1.41	0.45
9,299.00	90.57	2.28	7,204.78	2,196.99	354.97	2,195.04	4.14	0.71	4.08
9,392.00	91.48	2.81	7,203.12	2,289.89	359.10	2,287.91	1.13	0.98	0.57
9,486.00	90.20	359.05	7,201.74	2,383.85	360.63	2,381.86	4.22	-1.36	-4.00
9,580.00	90.27	358.76	7,201.35	2,477.83	358.83	2,475.85	0.32	0.07	-0.31
9,675.00	90.91	358.35	7,200.37	2,572.79	356.43	2,570.83	0.80	0.67	-0.43
9,769.00	89.36	359.41	7,200.15	2,666.77	354.60	2,664.81	2.00	-1.65	1.13
9,863.00	89.30	359.91	7,201.25	2,760.76	354.04	2,758.80	0.54	-0.06	0.53
9,958.00	89.53	0.29	7,202.22	2,855.76	354.21	2,853.80	0.47	0.24	0.40
10,052.00	91.21	2.17	7,201.61	2,949.72	356.22	2,947.75	2.68	1.79	2.00
10,147.00	90.27	1.36	7,200.39	3,044.67	359.15	3,042.68	1.31	-0.99	-0.85
10,242.00	88.89	1.16	7,201.08	3,139.64	361.24	3,137.64	1.47	-1.45	-0.21
10,336.00	90.20	0.90	7,201.83	3,233.62	362.93	3,231.61	1.42	1.39	-0.28
10,431.00	89.87	359.70	7,201.77	3,328.62	363.42	3,326.60	1.31	-0.35	-1.26
10,525.00	90.57	358.82	7,201.41	3,422.61	362.21	3,420.60	1.20	0.74	-0.94
10,618.00	89.97	359.13	7,200.97	3,515.59	360.55	3,513.59	0.73	-0.65	0.33
10,713.00	90.07	357.76	7,200.94	3,610.55	357.97	3,608.56	1.45	0.11	-1.44
10,807.00	89.23	357.33	7,201.51	3,704.47	353.94	3,702.50	1.00	-0.89	-0.46
10,901.00	90.00	358.06	7,202.15	3,798.39	350.16	3,796.44	1.13	0.82	0.78
10,995.00	89.43	358.29	7,202.61	3,892.34	347.17	3,890.40	0.65	-0.61	0.24
11,089.00	90.10	358.70	7,203.00	3,986.30	344.70	3,984.38	0.84	0.71	0.44
11,183.00	89.50	358.29	7,203.33	4,080.27	342.23	4,078.36	0.77	-0.64	-0.44
11,277.00	90.13	358.05	7,203.63	4,174.22	339.23	4,172.32	0.72	0.67	-0.26
11,370.00	89.43	357.50	7,203.99	4,267.15	335.62	4,265.27	0.96	-0.75	-0.59
11,464.00	89.43	357.55	7,204.92	4,361.06	331.56	4,359.20	0.05	0.00	0.05
11,556.00	89.63	357.84	7,205.68	4,452.98	327.86	4,451.14	0.38	0.22	0.32
11,649.00	88.39	358.65	7,207.28	4,545.92	325.01	4,544.09	1.59	-1.33	0.87
11,741.00	88.93	359.11	7,209.44	4,637.87	323.21	4,636.06	0.77	0.59	0.50
11,834.00	89.87	359.53	7,210.41	4,730.86	322.11	4,729.05	1.11	1.01	0.45
11,928.00	90.17	359.82	7,210.38	4,824.86	321.58	4,823.05	0.44	0.32	0.31
12,021.00	89.06	359.87	7,211.00	4,917.86	321.33	4,916.05	1.19	-1.19	0.05

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well Chica 4N2-23HZ
<b>Project:</b>	US Rockies Wattenberg Planning UTM83	<b>TVD Reference:</b>	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
<b>Site:</b>	Chica 4-35HZ Pad 3N-67W-35	<b>MD Reference:</b>	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
<b>Well:</b>	Chica 4N2-23HZ	<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)	
12,114.00	88.59	1.81	7,212.91	5,010.82	322.69	5,009.00	2.15	-0.51	2.09	
12,209.00	88.69	1.08	7,215.16	5,105.76	325.08	5,103.93	0.78	0.11	-0.77	
12,303.00	87.85	1.84	7,218.00	5,199.69	327.48	5,197.84	1.20	-0.89	0.81	
12,398.00	87.89	2.65	7,221.53	5,294.55	331.20	5,292.68	0.85	0.04	0.85	
12,492.00	88.72	2.55	7,224.31	5,388.41	335.46	5,386.52	0.89	0.88	-0.11	
12,587.00	89.93	1.67	7,225.43	5,483.34	338.96	5,481.42	1.57	1.27	-0.93	
12,682.00	92.35	2.61	7,223.54	5,578.24	342.50	5,576.31	2.73	2.55	0.99	
12,776.00	91.78	1.45	7,220.15	5,672.12	345.83	5,670.17	1.37	-0.61	-1.23	
12,871.00	90.74	1.49	7,218.07	5,767.07	348.27	5,765.10	1.10	-1.09	0.04	
12,963.00	87.18	1.60	7,219.74	5,859.00	350.74	5,857.02	3.87	-3.87	0.12	
13,058.00	87.55	1.79	7,224.10	5,953.86	353.55	5,951.86	0.44	0.39	0.20	
13,151.00	89.40	1.53	7,226.58	6,046.79	356.24	6,044.77	2.01	1.99	-0.28	
13,245.00	89.09	0.50	7,227.82	6,140.76	357.91	6,138.73	1.14	-0.33	-1.10	
13,339.00	88.93	1.06	7,229.44	6,234.74	359.19	6,232.70	0.62	-0.17	0.60	
13,433.00	89.23	0.85	7,230.95	6,328.71	360.76	6,326.67	0.39	0.32	-0.22	
13,527.00	90.84	1.31	7,230.89	6,422.69	362.53	6,420.64	1.78	1.71	0.49	
13,621.00	89.73	359.07	7,230.42	6,516.68	362.84	6,514.62	2.66	-1.18	-2.38	
13,715.00	90.20	359.40	7,230.48	6,610.67	361.58	6,608.62	0.61	0.50	0.35	
13,810.00	90.60	359.84	7,229.82	6,705.67	360.95	6,703.62	0.63	0.42	0.46	
13,902.00	91.85	0.40	7,227.85	6,797.65	361.15	6,795.59	1.49	1.36	0.61	
13,996.00	91.31	359.53	7,225.26	6,891.61	361.09	6,889.55	1.09	-0.57	-0.93	
14,089.00	90.77	359.05	7,223.57	6,984.59	359.94	6,982.54	0.78	-0.58	-0.52	
14,183.00	90.71	359.28	7,222.36	7,078.57	358.57	7,076.52	0.25	-0.06	0.24	
14,276.00	89.73	0.08	7,222.00	7,171.56	358.05	7,169.52	1.36	-1.05	0.86	
14,370.00	90.57	1.70	7,221.75	7,265.55	359.51	7,263.50	1.94	0.89	1.72	
14,464.00	89.43	359.84	7,221.75	7,359.53	360.77	7,357.47	2.32	-1.21	-1.98	
14,557.00	90.84	0.83	7,221.54	7,452.53	361.31	7,450.47	1.85	1.52	1.06	
14,652.00	90.40	359.75	7,220.51	7,547.52	361.80	7,545.45	1.23	-0.46	-1.14	
14,747.00	90.50	358.72	7,219.76	7,642.51	360.53	7,640.45	1.09	0.11	-1.08	
14,840.00	90.64	357.63	7,218.84	7,735.45	357.57	7,733.41	1.18	0.15	-1.17	
14,935.00	90.67	358.77	7,217.75	7,830.40	354.58	7,828.37	1.20	0.03	1.20	
15,030.00	90.60	358.29	7,216.70	7,925.36	352.14	7,923.34	0.51	-0.07	-0.51	
15,124.00	91.11	358.23	7,215.29	8,019.31	349.29	8,017.30	0.55	0.54	-0.06	
15,219.00	89.56	358.22	7,214.74	8,114.26	346.35	8,112.27	1.63	-1.63	-0.01	
15,312.00	89.36	359.33	7,215.62	8,207.23	344.36	8,205.25	1.21	-0.22	1.19	
15,407.00	88.56	0.96	7,217.34	8,302.21	344.60	8,300.23	1.91	-0.84	1.72	
15,502.00	88.66	0.96	7,219.64	8,397.17	346.19	8,395.17	0.11	0.11	0.00	
15,597.00	89.63	0.85	7,221.06	8,492.15	347.69	8,490.14	1.03	1.02	-0.12	
15,691.00	90.47	1.06	7,220.98	8,586.13	349.26	8,584.12	0.92	0.89	0.22	
15,785.00	89.53	359.76	7,220.98	8,680.13	349.93	8,678.11	1.71	-1.00	-1.38	
15,880.00	89.90	359.25	7,221.45	8,775.12	349.11	8,773.10	0.66	0.39	-0.54	
15,973.00	89.66	357.50	7,221.81	8,868.08	346.47	8,866.08	1.90	-0.26	-1.88	
16,065.00	89.97	358.90	7,222.11	8,960.03	343.58	8,958.04	1.56	0.34	1.52	



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well Chica 4N2-23HZ
<b>Project:</b>	US Rockies Wattenberg Planning UTM83	<b>TVD Reference:</b>	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
<b>Site:</b>	Chica 4-35HZ Pad 3N-67W-35	<b>MD Reference:</b>	GL 4844' & KB 20' @ 4864.00ft (Precision 461)
<b>Well:</b>	Chica 4N2-23HZ	<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)
16,159.00	89.77	358.77	7,222.32	9,054.01	341.67	9,052.03	0.25	-0.21	-0.14
16,254.00	89.77	359.44	7,222.70	9,149.00	340.19	9,147.03	0.71	0.00	0.71
16,348.00	89.93	359.74	7,222.95	9,243.00	339.52	9,241.02	0.36	0.17	0.32
16,443.00	90.17	359.84	7,222.86	9,338.00	339.17	9,336.02	0.27	0.25	0.11
16,538.00	89.87	358.54	7,222.83	9,432.98	337.82	9,431.02	1.40	-0.32	-1.37
16,633.00	90.20	358.89	7,222.77	9,527.96	335.69	9,526.00	0.51	0.35	0.37
16,726.00	89.90	357.88	7,222.69	9,620.92	333.07	9,618.98	1.13	-0.32	-1.09
16,819.00	89.80	358.84	7,222.94	9,713.88	330.41	9,711.95	1.04	-0.11	1.03
16,914.00	89.90	0.84	7,223.18	9,808.88	330.15	9,806.95	2.11	0.11	2.11
17,007.00	89.77	1.01	7,223.45	9,901.86	331.65	9,899.92	0.23	-0.14	0.18
17,102.00	90.94	1.64	7,222.86	9,996.83	333.84	9,994.88	1.40	1.23	0.66
17,195.00	89.83	1.62	7,222.24	10,089.79	336.49	10,087.83	1.19	-1.19	-0.02
17,291.00	89.77	1.50	7,222.57	10,185.76	339.10	10,183.77	0.14	-0.06	-0.13
17,384.00	89.87	1.95	7,222.87	10,278.71	341.90	10,276.71	0.50	0.11	0.48
17,477.00	90.07	2.29	7,222.91	10,371.65	345.34	10,369.63	0.42	0.22	0.37
17,572.00	90.40	2.77	7,222.53	10,466.56	349.54	10,464.51	0.61	0.35	0.51
17,667.00	91.01	3.64	7,221.36	10,561.40	354.85	10,559.33	1.12	0.64	0.92
17,760.00	91.28	4.05	7,219.50	10,654.17	361.08	10,652.06	0.53	0.29	0.44
17,800.00	91.34	3.98	7,218.58	10,694.06	363.88	10,691.94	0.23	0.15	-0.18
Last SDI MWD Survey									
17,856.00	91.34	3.98	7,217.27	10,749.91	367.77	10,747.77	0.00	0.00	0.00
Projection to TD : 147' FNL 753' FWL Sec 23									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
174.00	174.00	0.25	-0.38	First SDI MWD Survey
1,626.30	1,612.79	-57.00	149.64	Enter Land Box : 1626.30' MD & 1612.79' TVD
2,332.00	2,301.85	-119.86	287.87	Last SDI MWD Surface Survey
2,401.00	2,369.70	-125.30	299.19	First SDI MWD Production Survey
6,582.00	6,542.74	-81.88	346.54	Curve KOP
6,664.00	6,624.52	-76.28	345.47	First SDI MWD Curve Survey
7,603.00	7,205.66	502.03	350.66	Landing Point : 164' FSL 700' FWL Sec 26
7,603.00	7,205.66	502.03	350.66	Last SDI MWD Curve Survey
7,698.00	7,209.89	596.85	354.79	First SDI MWD Lateral Survey
17,800.00	7,218.58	10,694.06	363.88	Last SDI MWD Survey
17,856.00	7,217.27	10,749.91	367.77	Projection to TD : 147' FNL 753' FWL Sec 23

Checked By: _____	Approved By: _____	Date: _____
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