

WELL DETAILS: Norden 27C-14HZ

GL 4951' & KB 17' @ 4968.00ft (Xtreme 24) 4951.00
 Northing 14543160.47 Easting 1680952.88 Latitude 40.0450210 Longitude -104.8551590

Design: OH (Norden 27C-14HZ/OH)

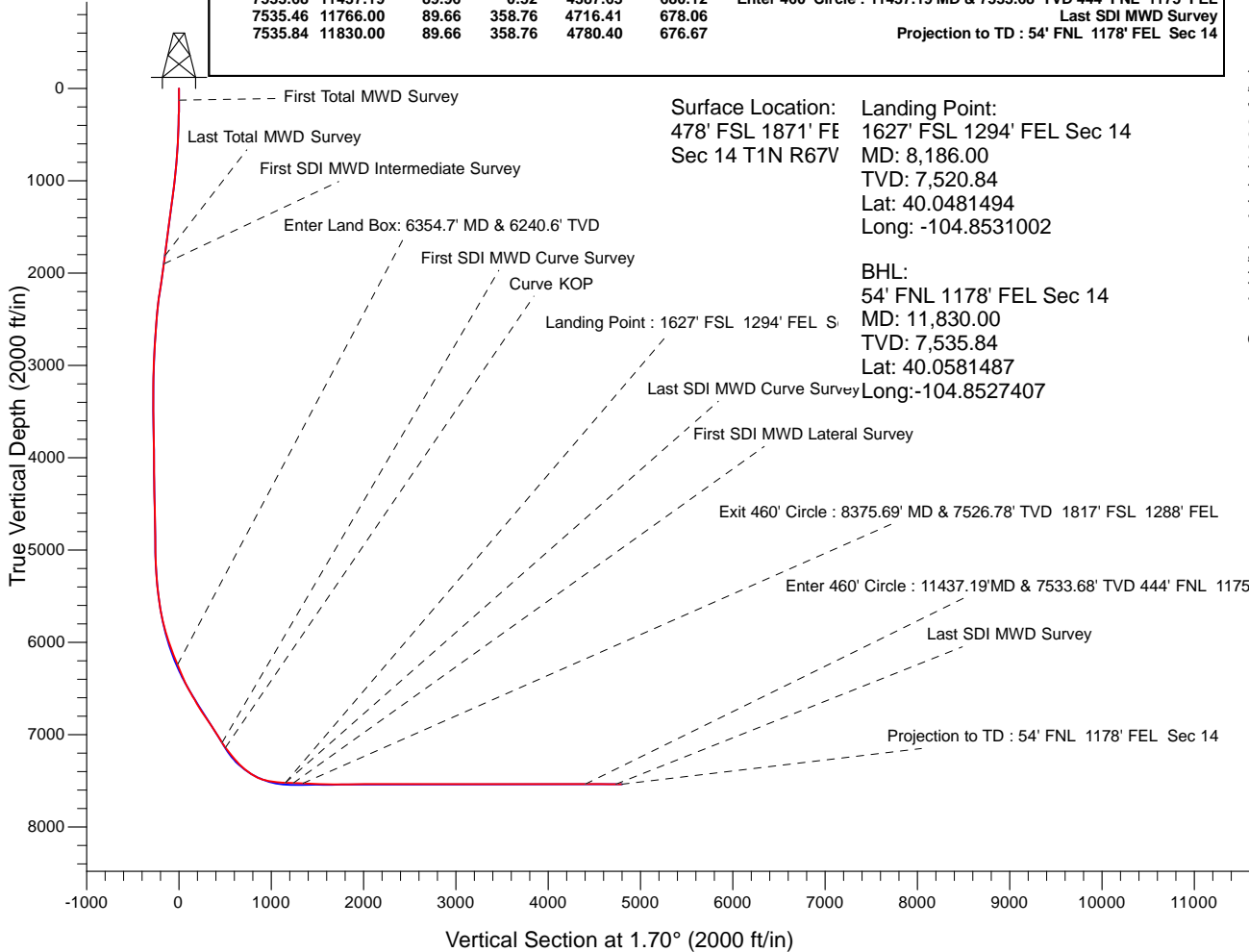
Created By: Seth Burstad Date: 11-28-2017

PROJECT DETAILS: US Rockies Wattenberg Planning UTM83

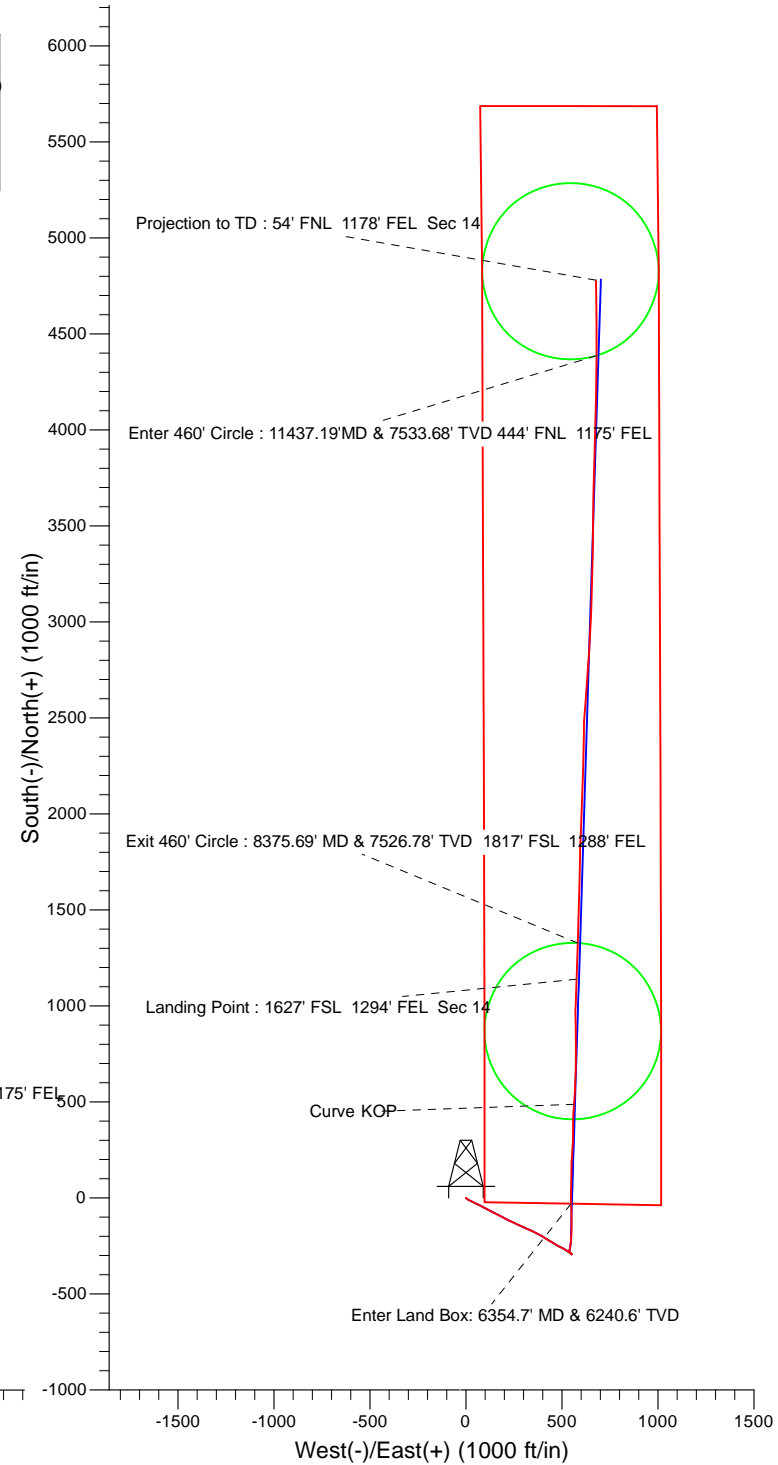
Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Zone 13N (108 W to 102 W)
 System Datum: Mean Sea Level
 Local North: True

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Annotation
126.00	126.00	0.83	66.76	0.36	0.84	First Total MWD Survey
1812.67	1861.00	17.84	114.66	-160.68	319.76	Last Total MWD Survey
1900.57	1953.00	16.49	114.22	-171.92	344.48	First SDI MWD Intermediate Survey
6240.60	6354.70	21.86	357.12	-29.51	547.26	Enter Land Box: 6354.7' MD & 6240.6' TVD
7086.30	7331.00	32.47	2.53	452.79	560.33	First SDI MWD Curve Survey
7139.12	7395.00	36.29	4.66	488.84	562.63	Curve KOP
7520.84	8186.00	88.53	1.96	1139.18	576.16	Landing Point : 1627' FSL 1294' FEL Sec 14
7520.84	8186.00	88.53	1.96	1139.18	576.16	Last SDI MWD Curve Survey
7522.71	8271.00	88.96	2.03	1224.11	579.12	First SDI MWD Lateral Survey
7526.78	8375.69	86.86	1.62	1328.66	582.26	Exit 460' Circle : 8375.69' MD & 7526.78' TVD 1817' FSL 1288' FEL
7533.68	11437.19	89.96	0.52	4387.63	680.12	Enter 460' Circle : 11437.19' MD & 7533.68' TVD 444' FNL 1175' FEL
7535.46	11766.00	89.66	358.76	4716.41	678.06	Last SDI MWD Survey
7535.84	11830.00	89.66	358.76	4780.40	676.67	Projection to TD : 54' FNL 1178' FEL Sec 14



Surface Location: 478' FSL 1871' FE Sec 14 T1N R67V
Landing Point: 1627' FSL 1294' FEL Sec 14
 MD: 8,186.00
 TVD: 7,520.84
 Lat: 40.0481494
 Long: -104.8531002
BHL: 54' FNL 1178' FEL Sec 14
 MD: 11,830.00
 TVD: 7,535.84
 Lat: 40.0581487
 Long: -104.8527407





US ROCKIES REGION PLANNING

US Rockies Wattenberg Planning UTM83

Norden 15-14HZ Pad

Norden 27C-14HZ

OH

Design: OH

Standard Survey Report

30 November, 2017



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Norden 27C-14HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
Site:	Norden 15-14HZ Pad	MD Reference:	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
Well:	Norden 27C-14HZ	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	Norden 15-14HZ Pad, Site Center : Norden 26N-14HZ				
Site Position:		Northing:	14,543,160.20 usft	Latitude:	40.0450200
From:	Lat/Long	Easting:	1,681,012.77 usft	Longitude:	-104.8549450
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.09 °

Well	Norden 27C-14HZ, 478' FSL 1871' FEL Sec 14 T1N R67W					
Well Position	+N/-S	0.00 ft	Northing:	14,543,160.46 usft	Latitude:	40.0450210
	+E/-W	0.00 ft	Easting:	1,680,952.88 usft	Longitude:	-104.8551590
Position Uncertainty	0.00 ft		Wellhead Elevation:	0.00 ft	Ground Level:	4,951.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/3/2017	8.33	66.47	52,213

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	1.70	

Survey Program	Date	11/30/2017			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
126.00	1,861.00	Survey #1 - Surface (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
1,953.00	5,702.00	Survey #2 - Intermediate (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
5,797.00	11,830.00	Survey #3 - 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)	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	0.00
126.00	0.83	66.76	126.00	0.36	0.84	0.38	0.66	0.66	0.00	0.00
First Total MWD Survey										
189.00	0.18	83.28	188.99	0.55	1.36	0.59	1.05	-1.03	26.22	
253.00	0.92	182.86	252.99	0.05	1.43	0.09	1.51	1.16	155.59	
284.00	0.83	157.55	283.99	-0.41	1.50	-0.36	1.27	-0.29	-81.65	
316.00	1.36	139.97	315.98	-0.91	1.84	-0.86	1.94	1.66	-54.94	
348.00	2.20	140.58	347.96	-1.68	2.47	-1.60	2.63	2.63	1.91	
380.00	2.90	137.86	379.93	-2.75	3.40	-2.65	2.22	2.19	-8.50	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Norden 27C-14HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
Site:	Norden 15-14HZ Pad	MD Reference:	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
Well:	Norden 27C-14HZ	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)	
411.00	3.47	128.19	410.89	-3.91	4.67	-3.77	2.52	1.84	-31.19	
443.00	4.00	127.22	442.82	-5.19	6.32	-5.00	1.67	1.66	-3.03	
475.00	4.44	124.94	474.73	-6.57	8.22	-6.32	1.47	1.38	-7.13	
507.00	4.97	118.43	506.62	-7.94	10.46	-7.63	2.35	1.66	-20.34	
539.00	5.71	120.37	538.48	-9.40	13.05	-9.01	2.38	2.31	6.06	
569.00	6.37	117.73	568.32	-10.93	15.81	-10.46	2.39	2.20	-8.80	
601.00	6.81	115.97	600.11	-12.59	19.09	-12.02	1.51	1.38	-5.50	
633.00	7.82	114.13	631.84	-14.31	22.78	-13.63	3.24	3.16	-5.75	
665.00	8.53	116.24	663.52	-16.25	26.89	-15.45	2.41	2.22	6.59	
696.00	9.23	114.92	694.15	-18.31	31.21	-17.38	2.35	2.26	-4.26	
728.00	10.20	115.18	725.69	-20.60	36.10	-19.52	3.03	3.03	0.81	
759.00	11.16	117.20	756.15	-23.14	41.26	-21.91	3.32	3.10	6.52	
791.00	11.56	118.52	787.52	-26.09	46.83	-24.69	1.49	1.25	4.13	
823.00	11.95	115.27	818.85	-29.03	52.64	-27.46	2.40	1.22	-10.16	
854.00	12.52	115.71	849.15	-31.86	58.57	-30.11	1.86	1.84	1.42	
886.00	13.32	115.89	880.34	-34.97	65.01	-33.03	2.50	2.50	0.56	
918.00	14.06	115.89	911.43	-38.28	71.82	-36.13	2.31	2.31	0.00	
949.00	14.85	118.61	941.45	-41.83	78.70	-39.47	3.36	2.55	8.77	
1,012.00	15.21	118.17	1,002.29	-49.60	93.07	-46.81	0.60	0.57	-0.70	
1,044.00	15.21	116.94	1,033.17	-53.48	100.52	-50.47	1.01	0.00	-3.84	
1,076.00	14.55	116.94	1,064.10	-57.20	107.84	-53.98	2.06	-2.06	0.00	
1,107.00	14.77	115.89	1,094.09	-60.69	114.87	-57.26	1.11	0.71	-3.39	
1,139.00	15.64	116.76	1,124.97	-64.41	122.39	-60.76	2.81	2.72	2.72	
1,171.00	16.30	117.56	1,155.73	-68.43	130.22	-64.54	2.17	2.06	2.50	
1,202.00	17.27	118.08	1,185.41	-72.61	138.14	-68.48	3.17	3.13	1.68	
1,234.00	17.75	117.56	1,215.93	-77.11	146.65	-72.72	1.58	1.50	-1.63	
1,266.00	17.18	116.15	1,246.45	-81.45	155.22	-76.81	2.22	-1.78	-4.41	
1,297.00	17.18	115.18	1,276.07	-85.41	163.47	-80.52	0.92	0.00	-3.13	
1,329.00	16.88	115.62	1,306.67	-89.43	171.94	-84.29	1.02	-0.94	1.38	
1,361.00	16.88	116.85	1,337.29	-93.54	180.27	-88.15	1.12	0.00	3.84	
1,392.00	17.40	119.49	1,366.91	-97.85	188.32	-92.22	3.02	1.68	8.52	
1,424.00	17.58	118.87	1,397.43	-102.54	196.72	-96.66	0.81	0.56	-1.94	
1,456.00	17.80	118.17	1,427.92	-107.18	205.26	-101.05	0.96	0.69	-2.19	
1,487.00	17.89	118.00	1,457.43	-111.66	213.65	-105.27	0.34	0.29	-0.55	
1,519.00	17.93	116.68	1,487.88	-116.18	222.39	-109.53	1.27	0.13	-4.13	
1,551.00	17.93	116.76	1,518.33	-120.60	231.19	-113.69	0.08	0.00	0.25	
1,583.00	18.46	115.45	1,548.73	-125.00	240.16	-117.82	2.09	1.66	-4.09	
1,614.00	18.98	114.22	1,578.09	-129.18	249.19	-121.73	2.11	1.68	-3.97	
1,645.00	19.29	112.72	1,607.37	-133.22	258.51	-125.50	1.87	1.00	-4.84	
1,677.00	18.46	114.39	1,637.65	-137.36	268.00	-129.35	3.09	-2.59	5.22	
1,708.00	18.54	115.36	1,667.05	-141.49	276.92	-133.22	1.03	0.26	3.13	
1,740.00	18.15	115.71	1,697.42	-145.84	286.01	-137.29	1.27	-1.22	1.09	
1,772.00	17.84	112.63	1,727.86	-149.88	295.02	-141.07	3.13	-0.97	-9.63	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Norden 27C-14HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
Site:	Norden 15-14HZ Pad	MD Reference:	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
Well:	Norden 27C-14HZ	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)	
1,804.00	17.80	113.51	1,758.32	-153.72	304.03	-144.63	0.85	-0.13	2.75	
1,835.00	17.31	113.69	1,787.88	-157.46	312.60	-148.12	1.59	-1.58	0.58	
1,861.00	17.84	114.66	1,812.67	-160.68	319.76	-151.12	2.33	2.04	3.73	
Last Total MWD Survey										
1,953.00	16.49	114.22	1,900.57	-171.92	344.48	-161.62	1.47	-1.47	-0.48	
First SDI MWD Intermediate Survey										
2,039.00	17.70	117.51	1,982.77	-182.96	367.21	-171.99	1.80	1.41	3.83	
2,124.00	18.46	120.04	2,063.57	-195.67	390.32	-184.00	1.29	0.89	2.98	
2,209.00	18.93	120.57	2,144.09	-209.42	413.84	-197.05	0.59	0.55	0.62	
2,294.00	16.98	121.98	2,224.94	-223.01	436.24	-209.97	2.35	-2.29	1.66	
2,381.00	15.24	120.81	2,308.52	-235.59	456.84	-221.93	2.03	-2.00	-1.34	
2,468.00	12.18	120.41	2,393.03	-246.10	474.58	-231.91	3.52	-3.52	-0.46	
2,553.00	10.51	118.21	2,476.37	-254.30	489.15	-239.68	2.03	-1.96	-2.59	
2,638.00	9.03	116.63	2,560.14	-260.95	501.94	-245.95	1.77	-1.74	-1.86	
2,723.00	8.09	119.35	2,644.19	-266.88	513.12	-251.54	1.20	-1.11	3.20	
2,810.00	7.02	123.63	2,730.43	-272.82	522.88	-257.19	1.39	-1.23	4.92	
2,895.00	5.76	123.36	2,814.90	-278.04	530.77	-262.18	1.48	-1.48	-0.32	
2,980.00	4.70	129.29	2,899.55	-282.59	537.03	-266.54	1.40	-1.25	6.98	
3,065.00	4.02	130.73	2,984.30	-286.74	541.98	-270.54	0.81	-0.80	1.69	
3,150.00	3.26	127.13	3,069.13	-290.15	546.16	-273.82	0.93	-0.89	-4.24	
3,235.00	1.58	131.20	3,154.05	-292.38	548.97	-275.96	1.99	-1.98	4.79	
3,320.00	0.84	130.18	3,239.03	-293.55	550.33	-277.10	0.87	-0.87	-1.20	
3,405.00	0.43	62.20	3,324.03	-293.80	551.09	-277.33	0.93	-0.48	-79.98	
3,490.00	0.46	0.40	3,409.03	-293.31	551.37	-276.83	0.54	0.04	-72.71	
3,575.00	0.55	323.51	3,494.02	-292.65	551.13	-276.17	0.39	0.11	-43.40	
3,660.00	0.88	321.23	3,579.02	-291.81	550.48	-275.35	0.39	0.39	-2.68	
3,744.00	1.36	322.98	3,663.00	-290.51	549.48	-274.08	0.57	0.57	2.08	
3,829.00	1.30	322.61	3,747.98	-288.94	548.28	-272.55	0.07	-0.07	-0.44	
3,913.00	1.37	320.12	3,831.95	-287.41	547.06	-271.06	0.11	0.08	-2.96	
3,998.00	0.95	299.04	3,916.94	-286.29	545.79	-269.97	0.70	-0.49	-24.80	
4,083.00	0.85	268.83	4,001.93	-285.96	544.55	-269.68	0.56	-0.12	-35.54	
4,168.00	1.00	284.07	4,086.92	-285.79	543.20	-269.55	0.34	0.18	17.93	
4,253.00	0.86	318.03	4,171.90	-285.14	542.05	-268.93	0.66	-0.16	39.95	
4,338.00	1.15	318.94	4,256.89	-284.02	541.06	-267.84	0.34	0.34	1.07	
4,422.00	1.23	333.34	4,340.87	-282.58	540.11	-266.43	0.37	0.10	17.14	
4,507.00	1.19	337.26	4,425.85	-280.95	539.36	-264.83	0.11	-0.05	4.61	
4,592.00	1.44	352.27	4,510.83	-279.08	538.87	-262.97	0.50	0.29	17.66	
4,678.00	1.99	355.21	4,596.79	-276.52	538.60	-260.42	0.65	0.64	3.42	
4,763.00	2.21	358.23	4,681.74	-273.41	538.43	-257.32	0.29	0.26	3.55	
4,849.00	0.96	10.17	4,767.70	-271.04	538.50	-254.95	1.50	-1.45	13.88	
4,934.00	0.29	22.45	4,852.70	-270.14	538.71	-254.04	0.80	-0.79	14.45	
5,019.00	0.44	182.12	4,937.70	-270.27	538.78	-254.17	0.85	0.18	187.85	
5,103.00	0.48	52.84	5,021.69	-270.38	539.05	-254.27	0.99	0.05	-153.90	
5,188.00	2.65	22.26	5,106.66	-268.35	540.08	-252.21	2.65	2.55	-35.98	

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Well:	Norden 27C-14HZ	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)	
5,274.00	4.20	7.52	5,192.50	-263.38	541.24	-247.21	2.06	1.80	-17.14	
5,359.00	4.24	14.37	5,277.27	-257.25	542.43	-241.05	0.59	0.05	8.06	
5,445.00	4.49	8.46	5,363.03	-250.85	543.71	-234.60	0.60	0.29	-6.87	
5,530.00	6.84	6.28	5,447.60	-242.52	544.76	-226.25	2.78	2.76	-2.56	
5,615.00	8.19	8.54	5,531.87	-231.50	546.21	-215.20	1.63	1.59	2.66	
5,702.00	8.47	0.71	5,617.96	-218.97	547.21	-202.64	1.34	0.32	-9.00	
5,797.00	11.78	6.28	5,711.47	-202.33	548.36	-185.97	3.63	3.48	5.86	
5,882.00	13.96	3.73	5,794.33	-183.47	549.97	-167.07	2.65	2.56	-3.00	
5,968.00	15.82	357.84	5,877.44	-161.40	550.21	-145.01	2.79	2.16	-6.85	
6,053.00	17.20	1.01	5,958.94	-137.26	549.99	-120.88	1.94	1.62	3.73	
6,138.00	20.91	2.24	6,039.26	-109.52	550.81	-93.13	4.39	4.36	1.45	
6,223.00	21.68	356.65	6,118.47	-78.69	550.48	-62.32	2.55	0.91	-6.58	
6,308.00	22.21	355.69	6,197.31	-47.00	548.36	-30.71	0.75	0.62	-1.13	
6,354.70	21.86	357.12	6,240.60	-29.51	547.26	-13.26	1.37	-0.74	3.06	
Enter Land Box: 6354.7' MD & 6240.6' TVD										
6,393.00	21.59	358.32	6,276.18	-15.34	546.69	0.88	1.37	-0.72	3.14	
6,480.00	22.41	1.22	6,356.84	17.24	546.58	33.44	1.56	0.94	3.33	
6,564.00	26.22	2.12	6,433.38	51.80	547.60	68.02	4.56	4.54	1.07	
6,649.00	27.99	0.56	6,509.04	90.52	548.49	106.75	2.24	2.08	-1.84	
6,734.00	30.81	1.59	6,583.09	132.23	549.29	148.47	3.37	3.32	1.21	
6,820.00	28.93	1.10	6,657.66	175.05	550.30	191.29	2.20	-2.19	-0.57	
6,905.00	33.91	3.56	6,730.18	219.30	552.17	235.58	6.05	5.86	2.89	
6,990.00	34.34	3.99	6,800.54	266.88	555.31	283.23	0.58	0.51	0.51	
7,076.00	33.24	0.80	6,872.02	314.65	557.33	331.04	2.43	-1.28	-3.71	
7,161.00	33.89	0.02	6,942.85	361.64	557.66	378.02	0.92	0.76	-0.92	
7,246.00	31.71	2.12	7,014.29	407.67	558.50	424.06	2.89	-2.56	2.47	
7,331.00	32.47	2.53	7,086.30	452.79	560.33	469.21	0.93	0.89	0.48	
First SDI MWD Curve Survey										
7,395.00	36.29	4.66	7,139.12	488.84	562.63	505.32	6.26	5.97	3.33	
Curve KOP										
7,416.00	37.55	5.28	7,155.91	501.41	563.72	517.91	6.26	6.00	2.94	
7,502.00	38.55	2.25	7,223.63	554.29	567.19	570.87	2.46	1.16	-3.52	
7,587.00	42.57	2.72	7,288.20	609.49	569.59	626.12	4.74	4.73	0.55	
7,673.00	47.34	1.36	7,349.04	670.20	571.72	686.86	5.66	5.55	-1.58	
7,757.00	53.65	0.53	7,402.45	734.97	572.77	751.64	7.55	7.51	-0.99	
7,845.00	60.22	358.68	7,450.44	808.67	572.22	825.29	7.67	7.47	-2.10	
7,930.00	73.38	359.72	7,483.85	886.62	571.17	903.17	15.52	15.48	1.22	
8,015.00	80.34	359.92	7,503.16	969.34	570.91	985.85	8.19	8.19	0.24	
8,101.00	83.71	2.60	7,515.09	1,054.47	572.79	1,070.99	4.99	3.92	3.12	
8,186.00	88.53	1.96	7,520.84	1,139.18	576.16	1,155.77	5.72	5.67	-0.75	
Landing Point : 1627' FSL 1294' FEL Sec 14 - Last SDI MWD Curve Survey										
8,271.00	88.96	2.03	7,522.71	1,224.11	579.12	1,240.75	0.51	0.51	0.08	
First SDI MWD Lateral Survey										
8,357.00	86.95	1.49	7,525.77	1,310.01	581.76	1,326.69	2.42	-2.34	-0.63	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Norden 27C-14HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
Site:	Norden 15-14HZ Pad	MD Reference:	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
Well:	Norden 27C-14HZ	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)	
8,375.69	86.86	1.62	7,526.78	1,328.66	582.26	1,345.35	0.83	-0.47	0.69	
Exit 460' Circle : 8375.69' MD & 7526.78' TVD 1817' FSL 1288' FEL										
8,444.00	86.54	2.09	7,530.71	1,396.82	584.47	1,413.55	0.83	-0.47	0.69	
8,529.00	89.03	1.51	7,534.00	1,481.71	587.14	1,498.48	3.01	2.93	-0.68	
8,614.00	89.43	1.62	7,535.14	1,566.67	589.46	1,583.47	0.49	0.47	0.13	
8,700.00	88.96	1.20	7,536.35	1,652.64	591.58	1,669.46	0.73	-0.55	-0.49	
8,785.00	88.56	1.16	7,538.19	1,737.60	593.33	1,754.43	0.47	-0.47	-0.05	
8,870.00	91.44	1.34	7,538.19	1,822.57	595.18	1,839.42	3.39	3.39	0.21	
8,955.00	92.11	2.31	7,535.56	1,907.48	597.89	1,924.38	1.39	0.79	1.14	
9,041.00	89.83	2.54	7,534.10	1,993.39	601.52	2,010.36	2.66	-2.65	0.27	
9,126.00	90.17	2.64	7,534.10	2,078.30	605.36	2,095.35	0.42	0.40	0.12	
9,210.00	90.00	2.03	7,533.98	2,162.23	608.79	2,179.34	0.75	-0.20	-0.73	
9,295.00	89.26	1.23	7,534.52	2,247.19	611.20	2,264.34	1.28	-0.87	-0.94	
9,381.00	88.46	0.74	7,536.24	2,333.16	612.68	2,350.31	1.09	-0.93	-0.57	
9,466.00	88.72	0.54	7,538.33	2,418.13	613.63	2,435.27	0.39	0.31	-0.24	
9,551.00	90.77	3.93	7,538.71	2,503.05	616.95	2,520.25	4.66	2.41	3.99	
9,637.00	90.94	4.36	7,537.42	2,588.81	623.16	2,606.16	0.54	0.20	0.50	
9,722.00	90.97	4.08	7,536.01	2,673.57	629.42	2,691.07	0.33	0.04	-0.33	
9,807.00	91.24	4.20	7,534.37	2,758.33	635.55	2,775.98	0.35	0.32	0.14	
9,894.00	90.50	3.80	7,533.05	2,845.11	641.62	2,862.89	0.97	-0.85	-0.46	
9,982.00	90.47	2.77	7,532.30	2,932.96	646.66	2,950.86	1.17	-0.03	-1.17	
10,067.00	90.87	2.68	7,531.31	3,017.86	650.70	3,035.84	0.48	0.47	-0.11	
10,152.00	89.06	2.03	7,531.36	3,102.79	654.19	3,120.83	2.26	-2.13	-0.76	
10,237.00	88.83	1.32	7,532.92	3,187.73	656.68	3,205.81	0.88	-0.27	-0.84	
10,323.00	89.06	1.30	7,534.51	3,273.70	658.64	3,291.80	0.27	0.27	-0.02	
10,408.00	89.33	1.00	7,535.70	3,358.67	660.35	3,376.78	0.47	0.32	-0.35	
10,493.00	90.60	0.51	7,535.75	3,443.66	661.47	3,461.77	1.60	1.49	-0.58	
10,580.00	90.03	0.98	7,535.28	3,530.65	662.60	3,548.76	0.85	-0.66	0.54	
10,666.00	90.23	0.07	7,535.08	3,616.65	663.39	3,634.74	1.08	0.23	-1.06	
10,751.00	90.00	2.16	7,534.91	3,701.63	665.04	3,719.73	2.47	-0.27	2.46	
10,839.00	90.00	1.29	7,534.91	3,789.59	667.69	3,807.73	0.99	0.00	-0.99	
10,924.00	90.27	1.40	7,534.71	3,874.56	669.69	3,892.72	0.34	0.32	0.13	
11,009.00	90.20	1.82	7,534.36	3,959.53	672.08	3,977.72	0.50	-0.08	0.49	
11,094.00	90.07	1.63	7,534.16	4,044.49	674.63	4,062.72	0.27	-0.15	-0.22	
11,180.00	90.13	1.16	7,534.01	4,130.46	676.73	4,148.72	0.55	0.07	-0.55	
11,265.00	90.20	1.00	7,533.77	4,215.45	678.33	4,233.72	0.21	0.08	-0.19	
11,350.00	89.97	0.43	7,533.64	4,300.44	679.39	4,318.70	0.72	-0.27	-0.67	
11,435.00	89.97	0.53	7,533.68	4,385.44	680.10	4,403.68	0.12	0.00	0.12	
11,437.19	89.96	0.52	7,533.68	4,387.63	680.12	4,405.87	0.68	-0.55	-0.40	
Enter 460' Circle : 11437.19' MD & 7533.68' TVD 444' FNL 1175' FEL										
11,520.00	89.50	0.19	7,534.08	4,470.43	680.64	4,488.66	0.68	-0.55	-0.40	
11,606.00	89.63	359.46	7,534.73	4,556.43	680.37	4,574.61	0.86	0.15	-0.85	
11,691.00	89.83	359.21	7,535.13	4,641.42	679.39	4,659.54	0.38	0.24	-0.29	
11,766.00	89.66	358.76	7,535.46	4,716.41	678.06	4,734.45	0.64	-0.23	-0.60	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Norden 27C-14HZ
Project:	US Rockies Wattenberg Planning UTM83	TVD Reference:	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
Site:	Norden 15-14HZ Pad	MD Reference:	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
Well:	Norden 27C-14HZ	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 Survey									
11,830.00	89.66	358.76	7,535.84	4,780.40	676.67	4,798.37	0.00	0.00	0.00
Projection to TD : 54' FNL 1178' FEL Sec 14									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
126.00	126.00	0.36	0.84	First Total MWD Survey	
1,861.00	1,812.67	-160.68	319.76	Last Total MWD Survey	
1,953.00	1,900.57	-171.92	344.48	First SDI MWD Intermediate Survey	
6,354.70	6,240.60	-29.51	547.26	Enter Land Box: 6354.7' MD & 6240.6' TVD	
7,331.00	7,086.30	452.79	560.33	First SDI MWD Curve Survey	
7,395.00	7,139.12	488.84	562.63	Curve KOP	
8,186.00	7,520.84	1,139.18	576.16	Landing Point : 1627' FSL 1294' FEL Sec 14	
8,186.00	7,520.84	1,139.18	576.16	Last SDI MWD Curve Survey	
8,271.00	7,522.71	1,224.11	579.12	First SDI MWD Lateral Survey	
8,375.69	7,526.78	1,328.66	582.26	Exit 460' Circle : 8375.69' MD & 7526.78' TVD 1817' FSL 1288' FEL	
11,437.19	7,533.68	4,387.63	680.12	Enter 460' Circle : 11437.19' MD & 7533.68' TVD 444' FNL 1175' FEL	
11,766.00	7,535.46	4,716.41	678.06	Last SDI MWD Survey	
11,830.00	7,535.84	4,780.40	676.67	Projection to TD : 54' FNL 1178' FEL Sec 14	

Checked By: _____ Approved By: _____ Date: _____