

WELL DETAILS: Norden 28N-14HZ

GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)	4951.00
Northing 14543161.05	Easting 1680863.04
Latitude 40.0450230	Longitude -104.8554800

Design: OH (Norden 28N-14HZ/OH)

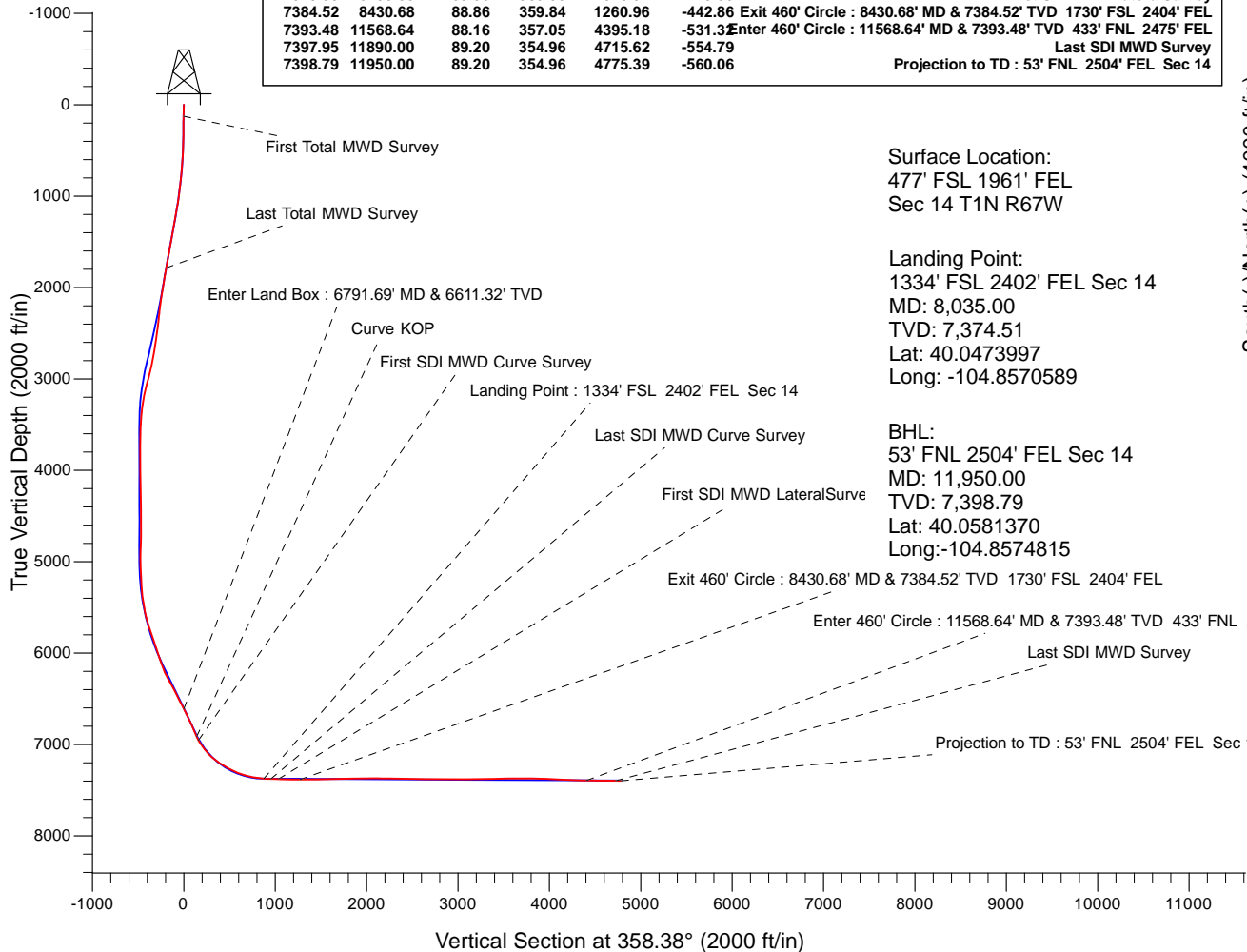
Created By: Seth Burstad Date: 10-04-2017

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

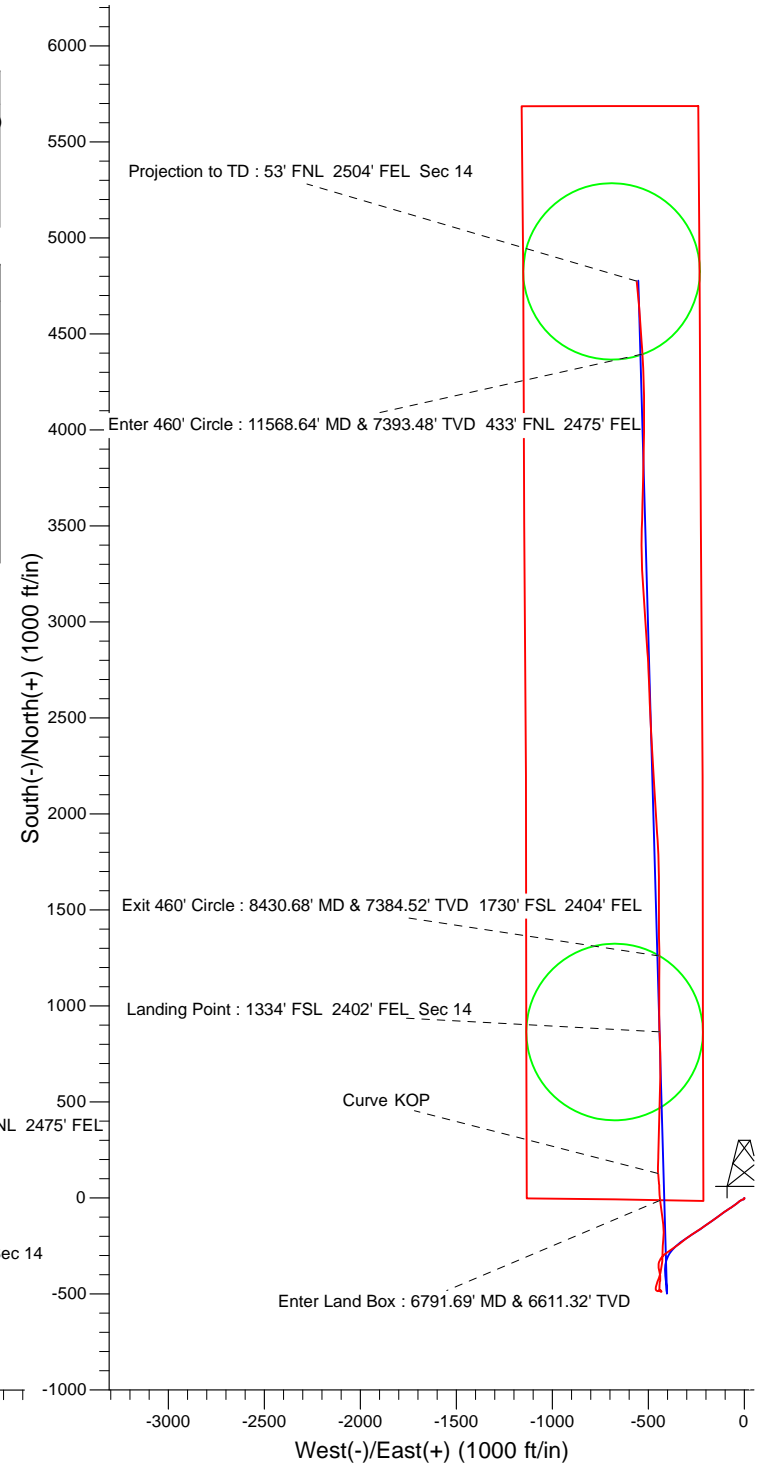
TVD	MD	Inc	Azi	+N/-S	+E/-W	Annotation
126.00	126.00	0.75	185.58	-0.82	-0.08	First Total MWD Survey
1785.92	1834.00	17.27	235.24	-200.03	-287.98	Last Total MWD Survey
6611.32	6791.69	27.22	353.78	-11.03	-438.54	Enter Land Box : 6791.69' MD & 6611.32' TVD
6916.85	7128.00	25.03	356.16	128.76	-449.22	Curve KOP
6954.13	7170.00	29.75	0.78	148.05	-449.67	First SDI MWD Curve Survey
7374.51	8035.00	85.84	358.66	865.45	-441.89	Landing Point : 1334' FSL 2402' FEL Sec 14
7377.98	8110.00	88.40	359.43	940.36	-443.16	Last SDI MWD Curve Survey
7379.35	8196.00	89.38	360.00	1026.34	-443.50	First SDI MWD Lateral Survey
7384.52	8430.68	88.86	359.84	1260.96	-442.86	Exit 460' Circle : 8430.68' MD & 7384.52' TVD 1730' FSL 2404' FEL
7393.48	11568.64	88.16	357.05	4395.18	-531.3	Enter 460' Circle : 11568.64' MD & 7393.48' TVD 433' FNL 2475' FEL
7397.95	11890.00	89.20	354.96	4715.62	-554.79	Last SDI MWD Survey
7398.79	11950.00	89.20	354.96	4775.39	-560.06	Projection to TD : 53' FNL 2504' FEL Sec 14



Surface Location:
 477' FSL 1961' FEL
 Sec 14 T1N R67W

Landing Point:
 1334' FSL 2402' FEL Sec 14
 MD: 8,035.00
 TVD: 7,374.51
 Lat: 40.0473997
 Long: -104.8570589

BHL:
 53' FNL 2504' FEL Sec 14
 MD: 11,950.00
 TVD: 7,398.79
 Lat: 40.0581370
 Long: -104.8574815





US ROCKIES REGION PLANNING

US Rockies Wattenberg Planning UTM83

Norden 15-14HZ Pad

Norden 28N-14HZ

OH

Design: OH

Standard Survey Report

04 October, 2017



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Norden 28N-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 28N-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 28N-14HZ, 477' FSL 1961' FEL Sec 14 T1N R67W					
Well Position	+N/-S	0.00 ft	Northing:	14,543,161.05 usft	Latitude:	40.0450230
	+E/-W	0.00 ft	Easting:	1,680,863.04 usft	Longitude:	-104.8554800
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	358.38	

Survey Program	Date	10/4/2017			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
126.00	1,834.00	Survey #1 - Surface (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
1,983.00	5,841.00	Survey #2 - Intermediate (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
6,002.00	11,950.00	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	
126.00	0.75	185.58	126.00	-0.82	-0.08	-0.82	0.60	0.60	0.00	
First Total MWD Survey										
158.00	1.14	168.09	157.99	-1.34	-0.03	-1.34	1.50	1.22	-54.66	
189.00	1.85	162.73	188.98	-2.12	0.18	-2.12	2.33	2.29	-17.29	
221.00	1.58	180.93	220.97	-3.05	0.32	-3.06	1.89	-0.84	56.88	
253.00	1.71	204.74	252.95	-3.93	0.12	-3.93	2.16	0.41	74.41	
284.00	2.07	220.30	283.94	-4.78	-0.44	-4.76	2.01	1.16	50.19	
316.00	2.07	235.86	315.92	-5.54	-1.29	-5.50	1.75	0.00	48.63	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Norden 28N-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 28N-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)	
348.00	2.15	256.42	347.90	-6.01	-2.35	-5.94	2.37	0.25	64.25	
380.00	2.64	251.94	379.87	-6.38	-3.64	-6.27	1.64	1.53	-14.00	
411.00	2.46	260.47	410.84	-6.71	-4.97	-6.56	1.35	-0.58	27.52	
443.00	2.90	256.60	442.80	-7.01	-6.44	-6.82	1.49	1.38	-12.09	
475.00	3.87	252.73	474.75	-7.52	-8.26	-7.28	3.11	3.03	-12.09	
507.00	4.48	251.06	506.66	-8.24	-10.47	-7.94	1.94	1.91	-5.22	
539.00	4.88	247.99	538.55	-9.16	-12.91	-8.79	1.47	1.25	-9.59	
569.00	5.76	244.29	568.42	-10.29	-15.45	-9.85	3.15	2.93	-12.33	
601.00	6.46	235.07	600.24	-12.02	-18.38	-11.49	3.76	2.19	-28.81	
633.00	7.51	234.54	632.01	-14.26	-21.55	-13.65	3.29	3.28	-1.66	
665.00	8.53	232.43	663.69	-16.92	-25.14	-16.20	3.32	3.19	-6.59	
696.00	9.23	232.25	694.32	-19.85	-28.93	-19.02	2.26	2.26	-0.58	
728.00	10.06	232.17	725.87	-23.13	-33.16	-22.18	2.59	2.59	-0.25	
791.00	11.38	230.41	787.77	-30.47	-42.30	-29.26	2.16	2.10	-2.79	
823.00	11.34	234.71	819.14	-34.30	-47.30	-32.95	2.65	-0.13	13.44	
854.00	11.87	235.77	849.51	-37.85	-52.42	-36.35	1.84	1.71	3.42	
886.00	11.65	235.15	880.84	-41.55	-57.80	-39.90	0.79	-0.69	-1.94	
918.00	12.04	235.42	912.15	-45.29	-63.20	-43.48	1.23	1.22	0.84	
949.00	13.32	236.74	942.40	-49.08	-68.84	-47.12	4.23	4.13	4.26	
981.00	13.67	236.65	973.51	-53.18	-75.09	-51.04	1.10	1.09	-0.28	
1,012.00	14.33	235.59	1,003.59	-57.37	-81.31	-55.04	2.28	2.13	-3.42	
1,044.00	15.03	236.56	1,034.55	-61.89	-88.04	-59.38	2.32	2.19	3.03	
1,076.00	14.99	237.00	1,065.46	-66.43	-94.97	-63.72	0.38	-0.13	1.38	
1,107.00	15.07	235.59	1,095.40	-70.89	-101.66	-67.99	1.21	0.26	-4.55	
1,139.00	16.30	234.45	1,126.20	-75.85	-108.75	-72.75	3.96	3.84	-3.56	
1,171.00	17.31	233.04	1,156.84	-81.33	-116.20	-78.01	3.40	3.16	-4.41	
1,202.00	17.45	231.73	1,186.42	-86.98	-123.54	-83.45	1.34	0.45	-4.23	
1,234.00	17.18	230.41	1,216.97	-92.96	-130.95	-89.22	1.49	-0.84	-4.13	
1,266.00	16.92	232.96	1,247.57	-98.78	-138.31	-94.83	2.47	-0.81	7.97	
1,297.00	16.79	234.89	1,277.23	-104.07	-145.57	-99.91	1.85	-0.42	6.23	
1,329.00	17.31	237.35	1,307.83	-109.30	-153.36	-104.92	2.78	1.63	7.69	
1,361.00	17.62	238.33	1,338.35	-114.41	-161.49	-109.80	1.34	0.97	3.06	
1,392.00	17.40	237.53	1,367.92	-119.36	-169.39	-114.52	1.05	-0.71	-2.58	
1,424.00	17.67	235.24	1,398.43	-124.70	-177.42	-119.63	2.32	0.84	-7.16	
1,456.00	18.37	234.71	1,428.86	-130.38	-185.53	-125.08	2.25	2.19	-1.66	
1,487.00	19.16	234.10	1,458.21	-136.19	-193.63	-130.66	2.63	2.55	-1.97	
1,519.00	19.20	232.50	1,488.44	-142.47	-202.06	-136.70	1.65	0.13	-5.00	
1,551.00	19.51	232.96	1,518.63	-148.89	-210.50	-142.88	1.08	0.97	1.44	
1,583.00	20.08	235.24	1,548.74	-155.24	-219.28	-148.98	3.00	1.78	7.13	
1,614.00	20.08	236.30	1,577.85	-161.23	-228.08	-154.72	1.17	0.00	3.42	
1,645.00	19.42	237.26	1,607.03	-166.97	-236.84	-160.21	2.37	-2.13	3.10	
1,677.00	19.37	238.49	1,637.21	-172.62	-245.84	-165.60	1.29	-0.16	3.84	
1,708.00	19.69	237.70	1,666.43	-178.10	-254.64	-170.83	1.34	1.03	-2.55	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Norden 28N-14HZ
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Site:	Norden 15-14HZ Pad	MD Reference:	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
Well:	Norden 28N-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)
1,740.00	19.64	236.65	1,696.56	-183.93	-263.69	-176.41	1.12	-0.16	-3.28
1,772.00	18.33	236.82	1,726.82	-189.64	-272.39	-181.87	4.10	-4.09	0.53
1,804.00	17.36	236.56	1,757.28	-195.03	-280.59	-187.02	3.04	-3.03	-0.81
1,834.00	17.27	235.24	1,785.92	-200.03	-287.98	-191.81	1.34	-0.30	-4.40
Last Total MWD Survey									
1,983.00	15.11	232.61	1,929.01	-224.44	-321.59	-215.26	1.53	-1.45	-1.77
2,069.00	14.70	230.00	2,012.11	-238.26	-338.85	-228.59	0.91	-0.48	-3.03
2,154.00	14.90	233.38	2,094.30	-251.71	-355.88	-241.55	1.04	0.24	3.98
2,239.00	14.42	236.63	2,176.53	-264.05	-373.49	-253.39	1.12	-0.56	3.82
2,324.00	12.84	235.73	2,259.13	-275.19	-390.14	-264.05	1.88	-1.86	-1.06
2,411.00	10.71	234.10	2,344.30	-285.38	-404.68	-273.82	2.48	-2.45	-1.87
2,498.00	10.87	226.80	2,429.76	-295.73	-417.21	-283.82	1.58	0.18	-8.39
2,583.00	10.59	222.61	2,513.28	-306.97	-428.34	-294.74	0.97	-0.33	-4.93
2,668.00	10.14	211.13	2,596.90	-319.12	-437.49	-306.63	2.48	-0.53	-13.51
2,753.00	10.28	199.64	2,680.56	-332.67	-443.91	-319.99	2.40	0.16	-13.52
2,840.00	10.28	182.71	2,766.19	-347.74	-446.89	-334.97	3.46	0.00	-19.46
2,925.00	11.59	171.61	2,849.65	-363.77	-446.00	-351.01	2.91	1.54	-13.06
3,010.00	14.29	166.65	2,932.49	-382.43	-442.33	-369.77	3.43	3.18	-5.84
3,095.00	15.88	173.09	3,014.56	-404.18	-438.51	-391.62	2.72	1.87	7.58
3,180.00	14.16	186.17	3,096.68	-426.07	-438.23	-413.51	4.46	-2.02	15.39
3,265.00	11.16	189.44	3,179.60	-444.52	-440.70	-431.89	3.63	-3.53	3.85
3,350.00	8.97	179.67	3,263.30	-459.27	-442.01	-446.59	3.26	-2.58	-11.49
3,435.00	6.44	181.12	3,347.52	-470.66	-442.06	-457.98	2.99	-2.98	1.71
3,520.00	4.32	182.35	3,432.14	-478.63	-442.29	-465.93	2.50	-2.49	1.45
3,604.00	3.23	136.82	3,515.98	-483.52	-440.80	-470.86	3.68	-1.30	-54.20
3,690.00	2.42	126.66	3,601.87	-486.37	-437.68	-473.80	1.10	-0.94	-11.81
3,773.00	1.23	118.63	3,684.83	-487.84	-435.49	-475.33	1.46	-1.43	-9.67
3,858.00	0.92	91.40	3,769.81	-488.29	-434.01	-475.83	0.69	-0.36	-32.04
3,943.00	0.86	73.85	3,854.80	-488.13	-432.72	-475.70	0.33	-0.07	-20.65
4,028.00	0.60	49.22	3,939.80	-487.66	-431.77	-475.26	0.47	-0.31	-28.98
4,113.00	0.94	354.54	4,024.79	-486.68	-431.50	-474.29	0.90	0.40	-64.33
4,198.00	1.36	324.90	4,109.77	-485.16	-432.14	-472.75	0.84	0.49	-34.87
4,283.00	1.10	335.51	4,194.75	-483.59	-433.06	-471.16	0.41	-0.31	12.48
4,367.00	0.51	334.16	4,278.75	-482.52	-433.56	-470.07	0.70	-0.70	-1.61
4,452.00	1.08	310.14	4,363.74	-481.67	-434.34	-469.19	0.76	0.67	-28.26
4,537.00	1.74	305.31	4,448.71	-480.40	-436.00	-467.89	0.79	0.78	-5.68
4,621.00	1.55	279.14	4,532.68	-479.49	-438.16	-466.91	0.91	-0.23	-31.15
4,708.00	1.61	255.74	4,619.65	-479.60	-440.51	-466.95	0.74	0.07	-26.90
4,793.00	1.63	235.20	4,704.61	-480.58	-442.66	-467.88	0.68	0.02	-24.16
4,878.00	1.85	227.82	4,789.57	-482.20	-444.67	-469.43	0.37	0.26	-8.68
4,963.00	2.19	229.68	4,874.52	-484.17	-446.92	-471.34	0.41	0.40	2.19
5,048.00	2.01	274.40	4,959.47	-485.10	-449.65	-472.20	1.89	-0.21	52.61
5,133.00	2.68	298.54	5,044.40	-484.04	-452.88	-471.04	1.39	0.79	28.40
5,219.00	3.00	296.38	5,130.29	-482.08	-456.66	-468.98	0.39	0.37	-2.51

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Well:	Norden 28N-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)	
5,304.00	3.47	327.84	5,215.16	-478.91	-460.03	-465.72	2.13	0.55	37.01	
5,389.00	5.01	357.57	5,299.94	-473.03	-461.55	-459.79	3.10	1.81	34.98	
5,474.00	7.47	10.87	5,384.43	-463.89	-460.67	-450.68	3.34	2.89	15.65	
5,559.00	10.37	15.09	5,468.40	-451.07	-457.63	-437.96	3.50	3.41	4.96	
5,646.00	11.75	22.59	5,553.78	-435.33	-452.19	-422.38	2.29	1.59	8.62	
5,731.00	15.94	20.63	5,636.30	-416.41	-444.75	-403.67	4.96	4.93	-2.31	
5,816.00	20.43	13.94	5,717.04	-391.07	-437.06	-378.56	5.82	5.28	-7.87	
5,841.00	20.81	12.84	5,740.44	-382.51	-435.02	-370.06	2.17	1.52	-4.40	
6,002.00	17.47	2.53	5,892.56	-330.45	-427.60	-318.23	2.94	-2.07	-6.40	
6,088.00	19.18	3.35	5,974.20	-303.45	-426.20	-291.28	2.01	1.99	0.95	
6,172.00	17.55	0.66	6,053.92	-277.01	-425.25	-264.88	2.19	-1.94	-3.20	
6,257.00	19.40	0.82	6,134.53	-250.08	-424.90	-237.97	2.18	2.18	0.19	
6,342.00	23.50	8.37	6,213.64	-219.18	-422.23	-207.15	5.81	4.82	8.88	
6,428.00	31.55	359.39	6,289.88	-179.63	-419.97	-167.69	10.51	9.36	-10.44	
6,514.00	29.44	354.52	6,363.99	-136.09	-422.22	-124.09	3.78	-2.45	-5.66	
6,599.00	24.69	350.06	6,439.67	-97.78	-427.29	-85.66	6.07	-5.59	-5.25	
6,684.00	27.73	353.31	6,515.92	-60.64	-432.66	-48.39	3.95	3.58	3.82	
6,769.00	27.66	353.07	6,591.18	-21.42	-437.34	-9.04	0.15	-0.08	-0.28	
6,791.69	27.22	353.78	6,611.32	-11.03	-438.54	1.37	2.42	-1.94	3.14	
Enter Land Box : 6791.69' MD & 6611.32' TVD										
6,854.00	26.03	355.85	6,667.02	16.78	-441.07	29.24	2.42	-1.91	3.32	
6,939.00	25.97	357.97	6,743.42	53.98	-443.08	66.48	1.10	-0.07	2.49	
7,025.00	22.15	354.68	6,821.94	88.95	-445.25	101.50	4.71	-4.44	-3.83	
7,110.00	23.06	353.66	6,900.41	121.45	-448.58	134.09	1.17	1.07	-1.20	
7,128.00	25.03	356.16	6,916.85	128.76	-449.22	141.41	12.32	10.94	13.91	
Curve KOP										
7,170.00	29.75	0.78	6,954.13	148.05	-449.67	160.71	12.32	11.24	10.98	
First SDI MWD Curve Survey										
7,195.00	32.62	2.93	6,975.52	160.99	-449.25	173.62	12.32	11.48	8.62	
7,280.00	37.37	358.98	7,045.14	209.70	-448.53	222.29	6.19	5.59	-4.65	
7,366.00	43.86	0.29	7,110.39	265.65	-448.85	278.23	7.61	7.55	1.52	
7,451.00	52.78	3.59	7,166.86	329.01	-446.57	341.50	10.88	10.49	3.88	
7,537.00	57.51	3.34	7,216.00	399.43	-442.31	411.78	5.51	5.50	-0.29	
7,622.00	60.98	0.16	7,259.47	472.42	-440.12	484.67	5.20	4.08	-3.74	
7,707.00	65.17	1.13	7,297.95	548.18	-439.26	560.38	5.03	4.93	1.14	
7,792.00	72.55	1.00	7,328.58	627.39	-437.79	639.52	8.68	8.68	-0.15	
7,879.00	77.61	358.96	7,350.98	711.43	-437.83	723.52	6.24	5.82	-2.34	
7,965.00	81.33	358.16	7,366.69	795.94	-439.96	808.06	4.42	4.33	-0.93	
8,035.00	85.84	358.66	7,374.51	865.45	-441.89	877.60	6.49	6.45	0.72	
Landing Point : 1334' FSL 2402' FEL Sec 14										
8,050.00	86.81	358.77	7,375.47	880.42	-442.22	892.57	6.49	6.45	0.71	
8,110.00	88.40	359.43	7,377.98	940.36	-443.16	952.51	2.87	2.65	1.11	
Last SDI MWD Curve Survey										
8,136.00	89.09	359.72	7,378.55	966.35	-443.35	978.50	2.87	2.65	1.10	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Norden 28N-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 28N-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)	
8,196.00	89.38	360.00	7,379.35	1,026.34	-443.50	1,038.47	0.67	0.48	0.46	
First SDI MWD Lateral Survey										
8,221.00	89.50	0.11	7,379.59	1,051.34	-443.48	1,063.46	0.67	0.48	0.46	
8,306.00	88.79	0.02	7,380.86	1,136.33	-443.38	1,148.41	0.84	-0.84	-0.11	
8,391.00	87.82	0.52	7,383.38	1,221.29	-442.98	1,233.33	1.28	-1.14	0.59	
8,430.68	88.86	359.84	7,384.52	1,260.96	-442.86	1,272.97	3.14	2.62	-1.72	
Exit 460' Circle : 8430.68' MD & 7384.52' TVD 1730' FSL 2404' FEL										
8,478.00	90.10	359.02	7,384.95	1,308.27	-443.33	1,320.28	3.14	2.62	-1.72	
8,564.00	90.40	359.27	7,384.58	1,394.26	-444.62	1,406.27	0.45	0.35	0.29	
8,649.00	91.51	0.66	7,383.16	1,479.24	-444.67	1,491.22	2.09	1.31	1.64	
8,734.00	91.31	0.06	7,381.07	1,564.22	-444.13	1,576.15	0.74	-0.24	-0.71	
8,819.00	91.14	359.08	7,379.25	1,649.19	-444.77	1,661.11	1.17	-0.20	-1.15	
8,905.00	91.71	359.10	7,377.11	1,735.16	-446.14	1,747.07	0.66	0.66	0.02	
8,990.00	91.31	356.82	7,374.87	1,820.07	-449.16	1,832.04	2.72	-0.47	-2.68	
9,075.00	92.21	355.90	7,372.26	1,904.85	-454.56	1,916.94	1.51	1.06	-1.08	
9,160.00	89.70	357.12	7,370.85	1,989.68	-459.73	2,001.88	3.28	-2.95	1.44	
9,245.00	90.13	356.19	7,370.97	2,074.53	-464.69	2,086.84	1.21	0.51	-1.09	
9,330.00	89.00	356.89	7,371.62	2,159.37	-469.82	2,171.79	1.56	-1.33	0.82	
9,415.00	88.96	356.38	7,373.13	2,244.21	-474.81	2,256.74	0.60	-0.05	-0.60	
9,500.00	89.06	356.00	7,374.60	2,329.01	-480.45	2,341.66	0.46	0.12	-0.45	
9,586.00	88.79	357.15	7,376.21	2,414.84	-485.59	2,427.60	1.37	-0.31	1.34	
9,671.00	89.60	358.34	7,377.41	2,499.76	-488.93	2,512.59	1.69	0.95	1.40	
9,757.00	89.03	357.74	7,378.44	2,585.71	-491.88	2,598.58	0.96	-0.66	-0.70	
9,842.00	89.56	357.47	7,379.48	2,670.62	-495.43	2,683.56	0.70	0.62	-0.32	
9,931.00	89.87	357.61	7,379.93	2,759.54	-499.25	2,772.55	0.38	0.35	0.16	
10,016.00	89.40	355.66	7,380.47	2,844.39	-504.24	2,857.51	2.36	-0.55	-2.29	
10,101.00	89.97	355.84	7,380.93	2,929.15	-510.54	2,942.42	0.70	0.67	0.21	
10,187.00	90.10	356.55	7,380.88	3,014.96	-516.24	3,028.35	0.84	0.15	0.83	
10,272.00	90.07	356.25	7,380.76	3,099.79	-521.58	3,113.30	0.35	-0.04	-0.35	
10,357.00	89.66	356.24	7,380.96	3,184.61	-527.15	3,198.24	0.48	-0.48	-0.01	
10,442.00	91.74	357.11	7,379.92	3,269.46	-532.08	3,283.19	2.65	2.45	1.02	
10,530.00	92.14	359.67	7,376.94	3,357.36	-534.55	3,371.13	2.94	0.45	2.91	
10,615.00	91.61	0.80	7,374.16	3,442.32	-534.20	3,456.04	1.47	-0.62	1.33	
10,701.00	90.74	1.33	7,372.39	3,528.28	-532.60	3,541.93	1.18	-1.01	0.62	
10,786.00	89.43	1.16	7,372.27	3,613.26	-530.75	3,626.82	1.55	-1.54	-0.20	
10,874.00	89.83	1.21	7,372.84	3,701.24	-528.93	3,714.71	0.46	0.45	0.06	
10,958.00	90.23	0.86	7,372.79	3,785.23	-527.42	3,798.62	0.63	0.48	-0.42	
11,044.00	88.36	1.68	7,373.85	3,871.19	-525.51	3,884.50	2.37	-2.17	0.95	
11,129.00	87.21	1.79	7,377.13	3,956.09	-522.94	3,969.29	1.36	-1.35	0.13	
11,214.00	86.38	0.16	7,381.89	4,040.94	-521.49	4,054.07	2.15	-0.98	-1.92	
11,299.00	87.69	359.28	7,386.28	4,125.82	-521.91	4,138.93	1.86	1.54	-1.04	
11,385.00	88.96	358.25	7,388.80	4,211.76	-523.76	4,224.89	1.90	1.48	-1.20	
11,470.00	88.70	357.67	7,390.53	4,296.69	-526.79	4,309.87	0.75	-0.31	-0.68	
11,555.00	87.95	357.14	7,393.02	4,381.57	-530.63	4,394.82	1.08	-0.88	-0.62	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Norden 28N-14HZ
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Site:	Norden 15-14HZ Pad	MD Reference:	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
Well:	Norden 28N-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)
11,568.64	88.16	357.05	7,393.48	4,395.18	-531.32	4,408.45	1.64	1.51	-0.66
Enter 460' Circle : 11568.64' MD & 7393.48' TVD 433' FNL 2475' FEL									
11,640.00	89.23	356.58	7,395.11	4,466.41	-535.29	4,479.76	1.64	1.51	-0.66
11,725.00	89.30	355.65	7,396.20	4,551.21	-541.05	4,564.68	1.10	0.08	-1.09
11,810.00	89.53	355.13	7,397.07	4,635.93	-547.88	4,649.56	0.67	0.27	-0.61
11,890.00	89.20	354.96	7,397.95	4,715.62	-554.79	4,729.42	0.46	-0.41	-0.21
Last SDI MWD Survey									
11,950.00	89.20	354.96	7,398.79	4,775.39	-560.06	4,789.31	0.00	0.00	0.00
Projection to TD : 53' FNL 2504' FEL Sec 14									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
126.00	126.00	-0.82	-0.08	First Total MWD Survey	
1,834.00	1,785.92	-200.03	-287.98	Last Total MWD Survey	
6,791.69	6,611.32	-11.03	-438.54	Enter Land Box : 6791.69' MD & 6611.32' TVD	
7,128.00	6,916.85	128.76	-449.22	Curve KOP	
7,170.00	6,954.13	148.05	-449.67	First SDI MWD Curve Survey	
8,035.00	7,374.51	865.45	-441.89	Landing Point : 1334' FSL 2402' FEL Sec 14	
8,110.00	7,377.98	940.36	-443.16	Last SDI MWD Curve Survey	
8,196.00	7,379.35	1,026.34	-443.50	First SDI MWD Lateral Survey	
8,430.68	7,384.52	1,260.96	-442.86	Exit 460' Circle : 8430.68' MD & 7384.52' TVD 1730' FSL 2404' FEL	
11,568.64	7,393.48	4,395.18	-531.32	Enter 460' Circle : 11568.64' MD & 7393.48' TVD 433' FNL 2475' FEL	
11,890.00	7,397.95	4,715.62	-554.79	Last SDI MWD Survey	
11,950.00	7,398.79	4,775.39	-560.06	Projection to TD : 53' FNL 2504' FEL Sec 14	

Checked By: _____ Approved By: _____ Date: _____