

WELL DETAILS: Norden 1N-14HZ

GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)				4951.00
Northing	Easting	Latitude	Longitude	
14543160.49	1680967.99	40.0450210	-104.8551050	

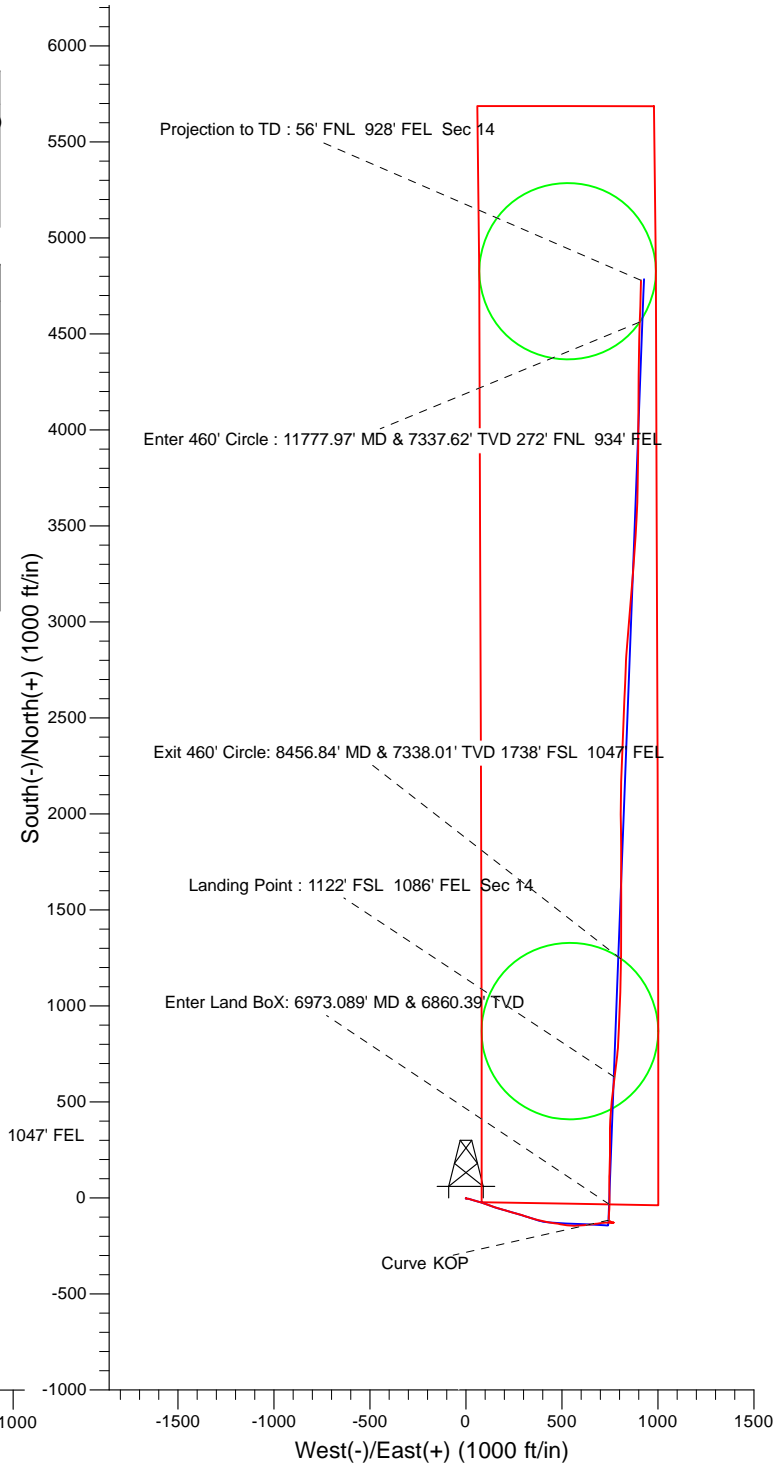
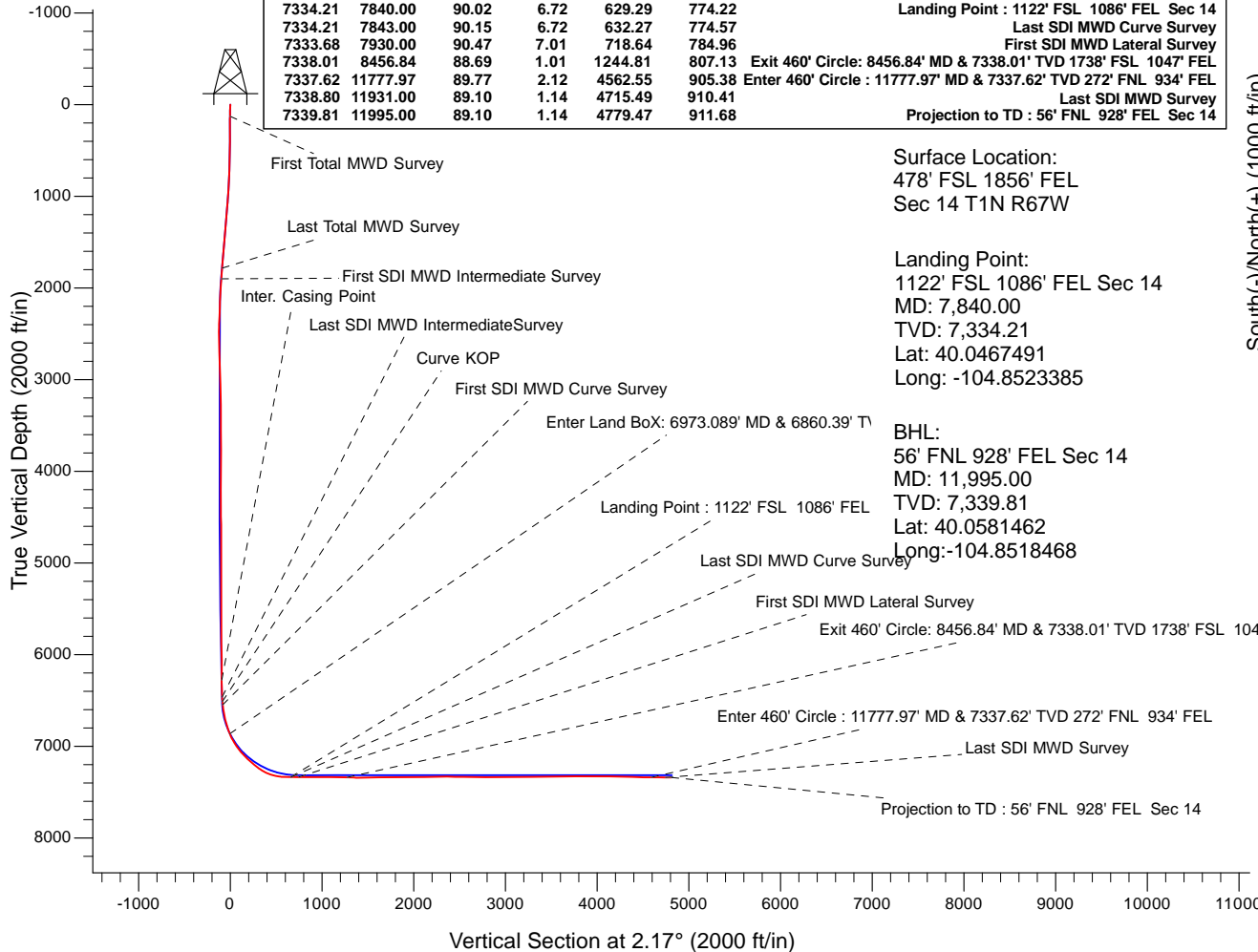
Design: OH (Norden 1N-14HZ/OH)
Created By: Seth Burstad Date: 9-06-2017

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
125.99	126.00	1.45	181.63	-1.59	-0.05	First Total MWD Survey
1780.60	1828.00	17.97	107.71	-102.05	331.23	Last Total MWD Survey
1899.72	1953.00	17.30	105.19	-112.79	367.53	First SDI MWD Intermediate Survey
6276.09	6378.00	1.36	262.70	-119.18	745.91	Inter. Casing Point
6462.07	6564.00	0.54	6.05	-117.90	745.03	Last SDI MWD Intermediate Survey
6511.01	6613.00	4.58	358.39	-115.71	745.00	Curve KOP
6546.81	6649.00	7.56	357.99	-111.91	744.87	First SDI MWD Curve Survey
6860.39	6973.08	21.88	0.24	-33.37	747.31	Enter Land BoX: 6973.089' MD & 6860.39' TVD
7334.21	7840.00	90.02	6.72	629.29	774.22	Landing Point : 1122' FSL 1086' FEL Sec 14
7334.21	7843.00	90.15	6.72	632.27	774.57	Last SDI MWD Curve Survey
7333.68	7930.00	90.47	7.01	718.64	784.96	First SDI MWD Lateral Survey
7338.01	8456.84	88.69	1.01	1244.81	807.13	Exit 460' Circle: 8456.84' MD & 7338.01' TVD 1738' FSL 1047' FEL
7337.62	11777.97	89.77	2.12	4562.55	905.38	Enter 460' Circle : 11777.97' MD & 7337.62' TVD 272' FNL 934' FEL
7338.80	11931.00	89.10	1.14	4715.49	910.41	Last SDI MWD Survey
7339.81	11995.00	89.10	1.14	4779.47	911.68	Projection to TD : 56' FNL 928' FEL Sec 14



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Norden 1N-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 1N-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 1N-14HZ, 478' FSL 1856' FEL Sec 14 T1N R67W					
Well Position	+N/-S	0.00 ft	Northing:	14,543,160.49 usft	Latitude:	40.0450210
	+E/-W	0.00 ft	Easting:	1,680,967.99 usft	Longitude:	-104.8551050
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	2.17	

Survey Program	Date	9/6/2017			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
126.00	1,828.00	Survey #1 - Surface (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
1,953.00	6,564.00	Survey #2 - Intermediate (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
6,649.00	11,995.00	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	1.45	181.63	125.99	-1.59	-0.05	-1.59	1.15	1.15	0.00	
First Total MWD Survey										
158.00	1.10	171.87	157.98	-2.30	-0.01	-2.30	1.28	-1.09	-30.50	
189.00	0.31	169.59	188.98	-2.68	0.04	-2.68	2.55	-2.55	-7.35	
221.00	0.75	112.72	220.97	-2.85	0.25	-2.83	1.99	1.38	-177.72	
253.00	1.32	98.22	252.97	-2.98	0.81	-2.95	1.95	1.78	-45.31	
284.00	1.89	91.45	283.96	-3.04	1.68	-2.98	1.93	1.84	-21.84	
316.00	2.33	98.22	315.94	-3.15	2.85	-3.04	1.58	1.38	21.16	

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Site:	Norden 15-14HZ Pad	MD Reference:	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
Well:	Norden 1N-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	2.59	93.65	347.91	-3.29	4.21	-3.13	1.02	0.81	-14.28	
380.00	2.94	95.76	379.87	-3.42	5.75	-3.20	1.14	1.09	6.59	
411.00	3.38	89.43	410.82	-3.49	7.45	-3.20	1.81	1.42	-20.42	
443.00	3.65	98.22	442.76	-3.62	9.41	-3.27	1.88	0.84	27.47	
475.00	4.26	95.32	474.69	-3.88	11.60	-3.44	2.01	1.91	-9.06	
507.00	4.61	102.00	506.59	-4.26	14.04	-3.72	1.95	1.09	20.88	
539.00	4.83	105.60	538.48	-4.89	16.59	-4.26	1.15	0.69	11.25	
569.00	5.58	103.93	568.36	-5.58	19.23	-4.85	2.55	2.50	-5.57	
601.00	6.20	104.81	600.19	-6.39	22.41	-5.54	1.96	1.94	2.75	
633.00	6.77	105.60	631.98	-7.34	25.89	-6.36	1.80	1.78	2.47	
665.00	7.51	105.87	663.73	-8.42	29.72	-7.29	2.31	2.31	0.84	
696.00	8.09	107.80	694.45	-9.64	33.75	-8.36	2.05	1.87	6.23	
728.00	8.92	107.98	726.10	-11.10	38.25	-9.64	2.60	2.59	0.56	
759.00	9.61	105.95	756.69	-12.55	43.03	-10.91	2.46	2.23	-6.55	
791.00	10.20	105.60	788.21	-14.05	48.32	-12.21	1.85	1.84	-1.09	
823.00	10.81	105.87	819.68	-15.63	53.94	-13.57	1.91	1.91	0.84	
854.00	11.56	105.25	850.09	-17.24	59.73	-14.97	2.45	2.42	-2.00	
886.00	11.82	106.57	881.42	-19.02	65.97	-16.51	1.17	0.81	4.13	
918.00	12.17	106.66	912.73	-20.92	72.34	-18.17	1.10	1.09	0.28	
949.00	12.79	105.69	942.99	-22.78	78.77	-19.79	2.11	2.00	-3.13	
981.00	13.18	108.24	974.18	-24.88	85.65	-21.62	2.17	1.22	7.97	
1,012.00	13.84	110.96	1,004.32	-27.32	92.47	-23.80	2.95	2.13	8.77	
1,044.00	14.24	111.14	1,035.36	-30.11	99.71	-26.31	1.26	1.25	0.56	
1,076.00	14.63	109.47	1,066.35	-32.87	107.19	-28.79	1.78	1.22	-5.22	
1,107.00	15.47	109.65	1,096.29	-35.57	114.78	-31.20	2.71	2.71	0.58	
1,139.00	16.66	109.56	1,127.04	-38.54	123.12	-33.85	3.72	3.72	-0.28	
1,171.00	17.05	110.61	1,157.66	-41.73	131.83	-36.70	1.55	1.22	3.28	
1,202.00	17.49	109.82	1,187.27	-44.90	140.47	-39.55	1.61	1.42	-2.55	
1,234.00	17.14	108.15	1,217.82	-48.00	149.47	-42.31	1.90	-1.09	-5.22	
1,266.00	17.49	106.83	1,248.37	-50.87	158.56	-44.82	1.64	1.09	-4.13	
1,297.00	17.75	106.57	1,277.91	-53.56	167.55	-47.18	0.88	0.84	-0.84	
1,329.00	18.06	106.66	1,308.36	-56.37	176.97	-49.63	0.97	0.97	0.28	
1,361.00	17.40	105.51	1,338.84	-59.08	186.34	-51.98	2.33	-2.06	-3.59	
1,392.00	16.88	104.11	1,368.46	-61.41	195.17	-53.98	2.14	-1.68	-4.52	
1,424.00	17.62	105.78	1,399.03	-63.86	204.33	-56.08	2.78	2.31	5.22	
1,456.00	17.93	107.01	1,429.50	-66.62	213.70	-58.48	1.52	0.97	3.84	
1,487.00	18.54	107.89	1,458.94	-69.53	222.96	-61.04	2.16	1.97	2.84	
1,551.00	19.07	106.48	1,519.52	-75.62	242.67	-66.38	1.09	0.83	-2.20	
1,583.00	19.51	106.22	1,549.73	-78.60	252.81	-68.97	1.40	1.38	-0.81	
1,614.00	20.26	104.90	1,578.88	-81.42	262.97	-71.41	2.82	2.42	-4.26	
1,645.00	20.74	103.85	1,607.92	-84.12	273.48	-73.70	1.95	1.55	-3.39	
1,677.00	20.52	104.28	1,637.86	-86.86	284.42	-76.03	0.83	-0.69	1.34	
1,708.00	20.21	107.10	1,666.93	-89.77	294.80	-78.55	3.32	-1.00	9.10	

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Well:	Norden 1N-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	18.98	110.35	1,697.07	-93.21	304.97	-81.59	5.13	-3.84	10.16	
1,772.00	18.41	109.21	1,727.39	-96.68	314.62	-84.70	2.12	-1.78	-3.56	
1,804.00	18.11	107.27	1,757.78	-99.82	324.14	-87.47	2.12	-0.94	-6.06	
1,828.00	17.97	107.71	1,780.60	-102.05	331.23	-89.44	0.81	-0.58	1.83	
Last Total MWD Survey										
1,953.00	17.30	105.19	1,899.72	-112.79	367.53	-98.79	0.81	-0.54	-2.02	
First SDI MWD Intermediate Survey										
2,038.00	17.18	102.11	1,980.90	-118.73	392.01	-103.81	1.08	-0.14	-3.62	
2,123.00	17.12	101.45	2,062.13	-123.85	416.54	-107.99	0.24	-0.07	-0.78	
2,209.00	17.54	97.85	2,144.22	-128.13	441.79	-111.31	1.34	0.49	-4.19	
2,294.00	17.47	97.65	2,225.29	-131.58	467.12	-113.80	0.11	-0.08	-0.24	
2,381.00	17.04	102.45	2,308.38	-136.07	492.51	-117.32	1.71	-0.49	5.52	
2,468.00	16.57	97.44	2,391.66	-140.42	517.26	-120.74	1.75	-0.54	-5.76	
2,553.00	18.05	95.04	2,472.81	-143.15	542.40	-122.51	1.93	1.74	-2.82	
2,638.00	18.76	91.02	2,553.47	-144.55	569.18	-122.89	1.71	0.84	-4.73	
2,723.00	18.47	84.29	2,634.03	-143.45	596.25	-120.77	2.55	-0.34	-7.92	
2,810.00	15.49	83.77	2,717.23	-140.82	621.52	-117.19	3.43	-3.43	-0.60	
2,895.00	12.54	82.78	2,799.69	-138.43	641.96	-114.02	3.48	-3.47	-1.16	
2,980.00	10.30	84.09	2,883.00	-136.49	658.68	-111.45	2.65	-2.64	1.54	
3,065.00	8.68	83.34	2,966.84	-134.96	672.61	-109.40	1.91	-1.91	-0.88	
3,150.00	7.64	81.31	3,050.97	-133.36	684.56	-107.35	1.27	-1.22	-2.39	
3,235.00	6.34	76.64	3,135.34	-131.42	694.71	-105.03	1.67	-1.53	-5.49	
3,320.00	5.19	88.61	3,219.91	-130.25	703.13	-103.53	1.95	-1.35	14.08	
3,405.00	3.75	84.71	3,304.65	-129.90	709.74	-102.93	1.73	-1.69	-4.59	
3,490.00	3.01	76.63	3,389.50	-129.12	714.68	-101.97	1.03	-0.87	-9.51	
3,575.00	3.69	88.45	3,474.36	-128.53	719.58	-101.20	1.14	0.80	13.91	
3,660.00	2.58	80.45	3,559.23	-128.14	724.20	-100.63	1.40	-1.31	-9.41	
3,744.00	1.78	74.12	3,643.17	-127.47	727.32	-99.84	0.99	-0.95	-7.54	
3,829.00	2.59	102.71	3,728.11	-127.53	730.46	-99.78	1.57	0.95	33.64	
3,913.00	1.93	101.60	3,812.04	-128.24	733.70	-100.36	0.79	-0.79	-1.32	
3,998.00	1.01	80.97	3,897.02	-128.41	735.84	-100.45	1.23	-1.08	-24.27	
4,083.00	1.01	86.91	3,982.00	-128.25	737.33	-100.24	0.12	0.00	6.99	
4,168.00	2.34	97.16	4,066.97	-128.42	739.80	-100.32	1.60	1.56	12.06	
4,253.00	2.12	86.41	4,151.90	-128.54	743.09	-100.31	0.55	-0.26	-12.65	
4,338.00	2.32	101.41	4,236.84	-128.78	746.35	-100.43	0.72	0.24	17.65	
4,422.00	1.54	106.48	4,320.79	-129.44	749.10	-100.98	0.95	-0.93	6.04	
4,507.00	2.78	95.42	4,405.73	-129.96	752.24	-101.38	1.53	1.46	-13.01	
4,592.00	3.24	73.54	4,490.61	-129.47	756.60	-100.73	1.44	0.54	-25.74	
4,678.00	1.49	92.51	4,576.54	-128.83	760.05	-99.96	2.20	-2.03	22.06	
4,763.00	1.51	80.59	4,661.51	-128.70	762.26	-99.74	0.37	0.02	-14.02	
4,849.00	1.31	71.82	4,747.48	-128.21	764.31	-99.17	0.34	-0.23	-10.20	
4,934.00	1.23	76.55	4,832.46	-127.69	766.12	-98.59	0.16	-0.09	5.56	
5,019.00	1.28	73.41	4,917.44	-127.21	767.92	-98.04	0.10	0.06	-3.69	
5,103.00	0.40	131.29	5,001.43	-127.13	769.04	-97.92	1.33	-1.05	68.90	

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Site:	Norden 15-14HZ Pad	MD Reference:	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
Well:	Norden 1N-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)	
5,188.00	0.20	194.36	5,086.43	-127.47	769.22	-98.26	0.42	-0.24	74.20	
5,274.00	0.29	264.47	5,172.43	-127.64	768.97	-98.43	0.34	0.10	81.52	
5,359.00	0.80	262.69	5,257.43	-127.74	768.17	-98.56	0.60	0.60	-2.09	
5,445.00	1.05	297.63	5,343.42	-127.45	766.87	-98.32	0.70	0.29	40.63	
5,530.00	1.19	286.58	5,428.40	-126.83	765.34	-97.76	0.30	0.16	-13.00	
5,615.00	1.04	286.99	5,513.38	-126.36	763.75	-97.35	0.18	-0.18	0.48	
5,701.00	0.78	264.26	5,599.37	-126.19	762.42	-97.23	0.51	-0.30	-26.43	
5,786.00	1.03	264.15	5,684.36	-126.32	761.09	-97.41	0.29	0.29	-0.13	
5,871.00	1.51	260.31	5,769.34	-126.59	759.22	-97.75	0.57	0.56	-4.52	
5,959.00	1.33	318.42	5,857.32	-126.02	757.40	-97.25	1.58	-0.20	66.03	
6,044.00	1.69	312.80	5,942.29	-124.43	755.83	-95.72	0.46	0.42	-6.61	
6,129.00	1.80	296.99	6,027.25	-122.97	753.72	-94.35	0.58	0.13	-18.60	
6,214.00	2.50	304.55	6,112.19	-121.32	751.00	-92.79	0.89	0.82	8.89	
6,299.00	2.13	295.90	6,197.12	-119.57	748.06	-91.16	0.60	-0.44	-10.18	
6,318.00	1.69	286.69	6,216.11	-119.34	747.47	-90.95	2.82	-2.32	-48.47	
6,378.00	1.36	262.70	6,276.09	-119.18	745.91	-90.85	1.18	-0.54	-39.98	
Inter. Casing Point										
6,393.00	1.33	255.28	6,291.09	-119.24	745.57	-90.93	1.18	-0.23	-49.47	
6,480.00	0.85	18.09	6,378.08	-118.89	744.79	-90.60	2.22	-0.55	141.16	
6,564.00	0.54	6.05	6,462.07	-117.90	745.03	-89.61	0.41	-0.37	-14.33	
Last SDI MWD Intermediate Survey										
6,613.00	4.58	358.39	6,511.01	-115.71	745.00	-87.42	8.27	8.25	-15.63	
Curve KOP										
6,649.00	7.56	357.99	6,546.81	-111.91	744.87	-83.62	8.27	8.26	-1.12	
First SDI MWD Curve Survey										
6,734.00	11.24	0.90	6,630.65	-98.03	744.81	-69.76	4.36	4.33	3.42	
6,820.00	13.25	4.88	6,714.69	-79.83	745.78	-51.53	2.53	2.34	4.63	
6,904.00	18.26	1.57	6,795.51	-57.07	746.96	-28.74	6.06	5.96	-3.94	
6,973.08	21.88	0.24	6,860.39	-33.37	747.31	-5.05	5.28	5.24	-1.92	
Enter Land BoX: 6973.089' MD & 6860.39' TVD										
6,990.00	22.77	359.98	6,876.04	-26.94	747.32	1.38	5.28	5.25	-1.56	
7,076.00	31.70	359.45	6,952.43	12.38	747.10	40.66	10.39	10.38	-0.62	
7,160.00	35.49	359.14	7,022.38	58.84	746.52	87.07	4.52	4.51	-0.37	
7,246.00	43.56	1.43	7,088.67	113.52	746.89	141.72	9.53	9.38	2.66	
7,331.00	48.30	2.44	7,147.77	174.54	748.97	202.77	5.64	5.58	1.19	
7,416.00	50.03	0.85	7,203.35	238.81	750.80	267.07	2.48	2.04	-1.87	
7,502.00	56.27	359.50	7,254.90	307.60	750.98	335.81	7.36	7.26	-1.57	
7,587.00	67.25	0.61	7,295.06	382.36	751.09	410.53	12.97	12.92	1.31	
7,673.00	78.22	5.51	7,320.56	464.21	755.57	492.49	13.86	12.76	5.70	
7,757.00	86.52	6.77	7,331.71	546.91	764.47	575.47	9.99	9.88	1.50	
7,840.00	90.02	6.72	7,334.21	629.29	774.22	658.15	4.22	4.22	-0.06	
Landing Point : 1122' FSL 1086' FEL Sec 14										
7,843.00	90.15	6.72	7,334.21	632.27	774.57	661.14	4.22	4.22	-0.06	
Last SDI MWD Curve Survey										

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Norden 1N-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 1N-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)	
7,845.00	90.23	6.72	7,334.20	634.25	774.80	663.14	4.22	4.22	-0.06	
7,930.00	90.47	7.01	7,333.68	718.64	784.96	747.85	0.44	0.28	0.34	
First SDI MWD Lateral Survey										
8,015.00	89.60	3.25	7,333.63	803.29	792.56	832.72	4.54	-1.02	-4.42	
8,101.00	89.87	2.64	7,334.03	889.17	796.98	918.71	0.78	0.31	-0.71	
8,186.00	89.83	2.28	7,334.25	974.09	800.63	1,003.71	0.43	-0.05	-0.42	
8,271.00	89.46	1.67	7,334.78	1,059.04	803.56	1,088.71	0.84	-0.44	-0.72	
8,356.00	88.96	0.91	7,335.95	1,144.01	805.47	1,173.69	1.07	-0.59	-0.89	
8,444.00	88.73	0.96	7,337.72	1,231.98	806.91	1,261.65	0.27	-0.26	0.06	
8,456.84	88.69	1.01	7,338.01	1,244.81	807.13	1,274.48	0.53	-0.32	0.42	
Exit 460' Circle: 8456.84' MD & 7338.01' TVD 1738' FSL 1047' FEL										
8,529.00	88.46	1.32	7,339.81	1,316.94	808.60	1,346.61	0.53	-0.32	0.42	
8,614.00	90.77	0.03	7,340.38	1,401.92	809.60	1,431.57	3.11	2.72	-1.52	
8,699.00	90.84	359.44	7,339.18	1,486.91	809.21	1,516.49	0.70	0.08	-0.69	
8,785.00	91.21	358.67	7,337.64	1,572.89	807.79	1,602.34	0.99	0.43	-0.90	
8,870.00	90.37	0.59	7,336.47	1,657.87	807.24	1,687.25	2.47	-0.99	2.26	
8,955.00	90.34	0.95	7,335.95	1,742.86	808.38	1,772.22	0.42	-0.04	0.42	
9,041.00	89.83	359.34	7,335.82	1,828.86	808.60	1,858.16	1.96	-0.59	-1.87	
9,125.00	89.73	358.98	7,336.14	1,912.85	807.37	1,942.05	0.44	-0.12	-0.43	
9,210.00	91.04	359.57	7,335.57	1,997.84	806.29	2,026.94	1.69	1.54	0.69	
9,295.00	91.74	0.83	7,333.51	2,082.81	806.59	2,111.86	1.70	0.82	1.48	
9,381.00	92.18	1.25	7,330.57	2,168.75	808.15	2,197.79	0.71	0.51	0.49	
9,466.00	90.54	3.47	7,328.55	2,253.64	811.65	2,282.76	3.25	-1.93	2.61	
9,551.00	89.36	1.91	7,328.62	2,338.54	815.64	2,367.75	2.30	-1.39	-1.84	
9,637.00	88.36	1.85	7,330.33	2,424.48	818.46	2,453.73	1.16	-1.16	-0.07	
9,722.00	89.50	2.22	7,331.92	2,509.41	821.48	2,538.71	1.41	1.34	0.44	
9,807.00	89.36	2.60	7,332.77	2,594.33	825.05	2,623.71	0.48	-0.16	0.45	
9,894.00	88.89	2.70	7,334.10	2,681.23	829.07	2,710.70	0.55	-0.54	0.11	
9,981.00	88.69	1.97	7,335.93	2,768.13	832.62	2,797.68	0.87	-0.23	-0.84	
10,066.00	89.80	4.01	7,337.05	2,853.00	837.05	2,882.65	2.73	1.31	2.40	
10,152.00	91.14	5.19	7,336.35	2,938.72	843.95	2,968.57	2.08	1.56	1.37	
10,237.00	90.97	4.76	7,334.78	3,023.39	851.32	3,053.45	0.54	-0.20	-0.51	
10,322.00	91.07	4.96	7,333.27	3,108.07	858.52	3,138.35	0.26	0.12	0.24	
10,408.00	90.67	4.22	7,331.96	3,193.78	865.40	3,224.26	0.98	-0.47	-0.86	
10,493.00	90.60	3.94	7,331.02	3,278.56	871.44	3,309.21	0.34	-0.08	-0.33	
10,580.00	90.84	4.37	7,329.93	3,365.32	877.75	3,396.15	0.57	0.28	0.49	
10,666.00	91.51	3.89	7,328.16	3,451.08	883.94	3,482.08	0.96	0.78	-0.56	
10,751.00	90.30	2.47	7,326.82	3,535.94	888.65	3,567.05	2.19	-1.42	-1.67	
10,839.00	90.94	2.17	7,325.87	3,623.86	892.22	3,655.04	0.80	0.73	-0.34	
10,923.00	90.00	1.24	7,325.18	3,707.82	894.72	3,739.04	1.57	-1.12	-1.11	
11,009.00	90.67	0.75	7,324.68	3,793.80	896.21	3,825.02	0.97	0.78	-0.57	
11,094.00	88.93	359.79	7,324.97	3,878.80	896.61	3,909.96	2.34	-2.05	-1.13	
11,180.00	88.83	0.51	7,326.66	3,964.78	896.83	3,995.89	0.85	-0.12	0.84	
11,265.00	88.99	0.67	7,328.27	4,049.76	897.71	4,080.85	0.27	0.19	0.19	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well Norden 1N-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 1N-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)	
11,350.00	88.93	0.56	7,329.82	4,134.74	898.62	4,165.80	0.15	-0.07	-0.13	
11,435.00	88.96	0.85	7,331.38	4,219.72	899.67	4,250.76	0.34	0.04	0.34	
11,520.00	88.59	0.74	7,333.20	4,304.69	900.85	4,335.71	0.45	-0.44	-0.13	
11,606.00	88.16	359.97	7,335.64	4,390.65	901.38	4,421.64	1.03	-0.50	-0.90	
11,691.00	89.70	1.60	7,337.22	4,475.63	902.54	4,506.59	2.64	1.81	1.92	
11,775.00	89.77	2.12	7,337.61	4,559.58	905.27	4,590.59	0.62	0.08	0.62	
11,777.97	89.77	2.12	7,337.62	4,562.55	905.38	4,593.56	0.13	-0.13	-0.02	
Enter 460' Circle : 11777.97' MD & 7337.62' TVD 272' FNL 934' FEL										
11,860.00	89.66	2.10	7,338.04	4,644.52	908.40	4,675.59	0.13	-0.13	-0.02	
11,931.00	89.10	1.14	7,338.80	4,715.49	910.41	4,746.58	1.57	-0.79	-1.35	
Last SDI MWD Survey										
11,995.00	89.10	1.14	7,339.81	4,779.47	911.68	4,810.56	0.00	0.00	0.00	
Projection to TD : 56' FNL 928' FEL Sec 14										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
126.00	125.99	-1.59	-0.05	First Total MWD Survey	
1,828.00	1,780.60	-102.05	331.23	Last Total MWD Survey	
1,953.00	1,899.72	-112.79	367.53	First SDI MWD Intermediate Survey	
6,378.00	6,276.09	-119.18	745.91	Inter. Casing Point	
6,564.00	6,462.07	-117.90	745.03	Last SDI MWD Intermediate Survey	
6,613.00	6,511.01	-115.71	745.00	Curve KOP	
6,649.00	6,546.81	-111.91	744.87	First SDI MWD Curve Survey	
6,973.08	6,860.39	-33.37	747.31	Enter Land BoX: 6973.089' MD & 6860.39' TVD	
7,840.00	7,334.21	629.29	774.22	Landing Point : 1122' FSL 1086' FEL Sec 14	
7,843.00	7,334.21	632.27	774.57	Last SDI MWD Curve Survey	
7,930.00	7,333.68	718.64	784.96	First SDI MWD Lateral Survey	
8,456.84	7,338.01	1,244.81	807.13	Exit 460' Circle: 8456.84' MD & 7338.01' TVD 1738' FSL 1047' FEL	
11,777.97	7,337.62	4,562.55	905.38	Enter 460' Circle : 11777.97' MD & 7337.62' TVD 272' FNL 934' FEL	
11,931.00	7,338.80	4,715.49	910.41	Last SDI MWD Survey	
11,995.00	7,339.81	4,779.47	911.68	Projection to TD : 56' FNL 928' FEL Sec 14	

Checked By: _____ Approved By: _____ Date: _____