

**WELL DETAILS: Norden 1C-14HZ**

GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)				4951.00
<b>Northing</b>	<b>Easting</b>	<b>Latitude</b>	<b>Longitude</b>	
14543160.18	1680997.94	40.0450200	-104.8549980	

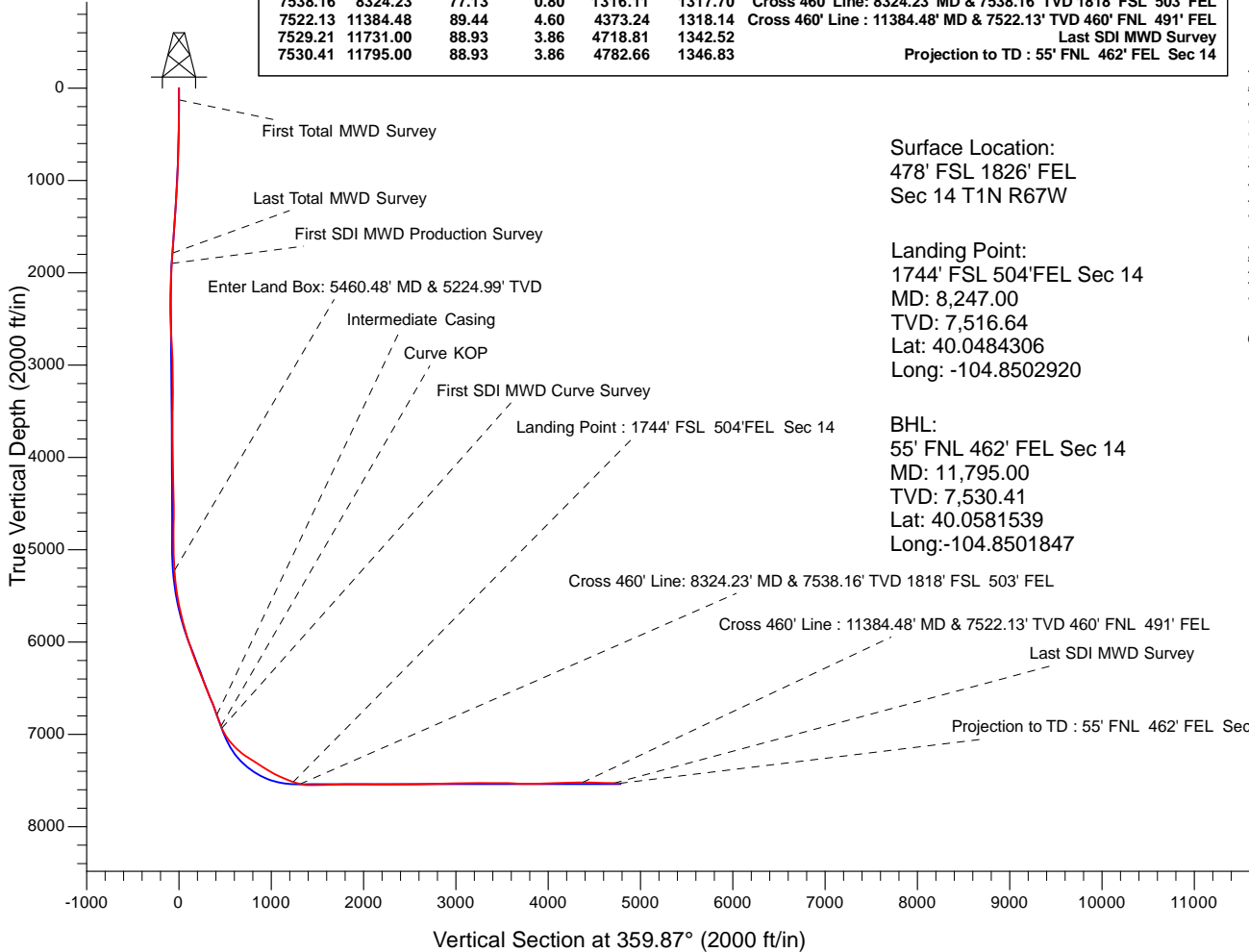
<b>Design:</b> OH (Norden 1C-14HZ/OH)
<b>Created By:</b> Seth Burstad <b>Date:</b> 10-12-2017

**PROJECT DETAILS: US Rockies Wattenberg Planning UTM83**

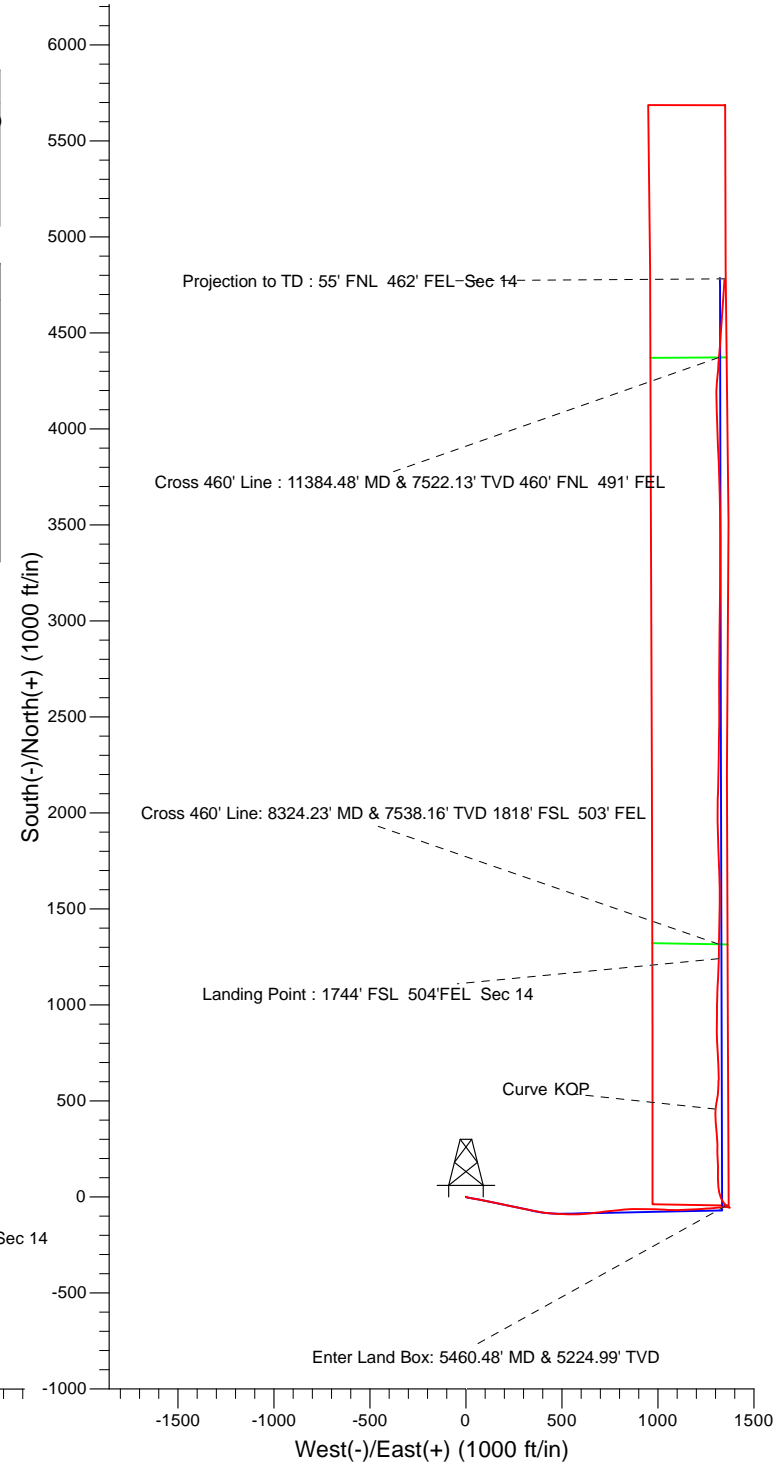
<b>Geodetic System:</b> Universal Transverse Mercator (US Survey Feet)	
<b>Datum:</b> North American Datum 1983	
<b>Ellipsoid:</b> GRS 1980	
<b>Zone:</b> Zone 13N (108 W to 102 W)	
<b>System Datum:</b> Mean Sea Level	
<b>Local North:</b> True	

**ANNOTATIONS**

TVD	MD	Inc	Azi	+N/-S	+E/-W	Annotation
126.00	126.00	0.79	11.47	0.85	0.17	First Total MWD Survey
1787.47	1835.00	18.19	101.38	-69.01	337.40	Last Total MWD Survey
1898.68	1953.00	20.86	100.42	-76.44	376.12	First SDI MWD Production Survey
5224.99	5460.48	6.03	308.73	-44.39	1356.27	Enter Land Box: 5460.48' MD & 5224.99' TVD
6788.89	7100.00	19.09	357.09	413.74	1300.28	Intermediate Casing
6913.96	7233.00	22.94	5.25	458.84	1300.43	Curve KOP
6935.02	7256.00	24.50	7.03	468.03	1301.42	First SDI MWD Curve Survey
7516.64	8247.00	70.90	0.99	1241.99	1316.99	Landing Point : 1744' FSL 504'FEL Sec 14
7538.16	8324.23	77.13	0.80	1316.11	1317.70	Cross 460' Line: 8324.23' MD & 7538.16' TVD 1818' FSL 503' FEL
7522.13	11384.48	89.44	4.60	4373.24	1318.14	Cross 460' Line : 11384.48' MD & 7522.13' TVD 460' FNL 491' FEL
7529.21	11731.00	88.93	3.86	4718.81	1342.52	Last SDI MWD Survey
7530.41	11795.00	88.93	3.86	4782.66	1346.83	Projection to TD : 55' FNL 462' FEL Sec 14



**Surface Location:**  
 478' FSL 1826' FEL  
 Sec 14 T1N R67W  
  
**Landing Point:**  
 1744' FSL 504'FEL Sec 14  
 MD: 8,247.00  
 TVD: 7,516.64  
 Lat: 40.0484306  
 Long: -104.8502920  
  
**BHL:**  
 55' FNL 462' FEL Sec 14  
 MD: 11,795.00  
 TVD: 7,530.41  
 Lat: 40.0581539  
 Long: -104.8501847





# US ROCKIES REGION PLANNING

US Rockies Wattenberg Planning UTM83

Norden 15-14HZ Pad

Norden 1C-14HZ

OH

Design: OH

## Standard Survey Report

12 October, 2017



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well Norden 1C-14HZ
<b>Project:</b>	US Rockies Wattenberg Planning UTM83	<b>TVD Reference:</b>	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
<b>Site:</b>	Norden 15-14HZ Pad	<b>MD Reference:</b>	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
<b>Well:</b>	Norden 1C-14HZ	<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)		

<b>Site</b>	Norden 15-14HZ Pad, Site Center : Norden 26N-14HZ				
<b>Site Position:</b>		<b>Northing:</b>	14,543,160.20 usft	<b>Latitude:</b>	40.0450200
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,681,012.77 usft	<b>Longitude:</b>	-104.8549450
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.09 °

<b>Well</b>	Norden 1C-14HZ, 478' FSL 1826' FEL Sec 14 T1N R67W					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	14,543,160.17 usft	<b>Latitude:</b>	40.0450200
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	1,680,997.94 usft	<b>Longitude:</b>	-104.8549980
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	0.00 ft	<b>Ground Level:</b>	4,951.00 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>
	HDGM	8/3/2017	8.33	66.47	52,213

<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	359.87	

<b>Survey Program</b>	<b>Date</b>	10/12/2017			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
126.00	1,835.00	Survey #1 - Surface (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
1,953.00	7,040.00	Survey #2 - Intermediate (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
7,169.00	11,795.00	Survey #3 - Production (OH)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	

<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	
126.00	0.79	11.47	126.00	0.85	0.17	0.85	0.63	0.63	0.00	
<b>First Total MWD Survey</b>										
158.00	0.57	0.31	157.99	1.23	0.22	1.23	0.80	-0.69	-34.88	
189.00	0.40	22.37	188.99	1.48	0.26	1.48	0.81	-0.55	71.16	
221.00	0.13	186.55	220.99	1.55	0.30	1.55	1.64	-0.84	513.06	
253.00	0.44	119.40	252.99	1.45	0.40	1.45	1.27	0.97	-209.84	
284.00	0.75	151.04	283.99	1.22	0.60	1.21	1.42	1.00	102.06	
316.00	1.27	140.41	315.99	0.76	0.93	0.76	1.72	1.63	-33.22	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well Norden 1C-14HZ
<b>Project:</b>	US Rockies Wattenberg Planning UTM83	<b>TVD Reference:</b>	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
<b>Site:</b>	Norden 15-14HZ Pad	<b>MD Reference:</b>	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
<b>Well:</b>	Norden 1C-14HZ	<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)	
348.00	1.63	120.98	347.98	0.25	1.55	0.25	1.89	1.13	-60.72	
380.00	2.20	122.83	379.96	-0.32	2.45	-0.32	1.79	1.78	5.78	
411.00	2.42	111.49	410.93	-0.88	3.56	-0.89	1.63	0.71	-36.58	
475.00	3.56	102.18	474.84	-1.79	6.76	-1.81	1.93	1.78	-14.55	
507.00	4.22	106.48	506.77	-2.34	8.86	-2.36	2.25	2.06	13.44	
539.00	4.97	98.92	538.67	-2.88	11.36	-2.91	3.01	2.34	-23.63	
569.00	5.97	99.98	568.53	-3.36	14.18	-3.39	3.35	3.33	3.53	
601.00	6.50	102.00	600.34	-4.02	17.59	-4.06	1.79	1.66	6.31	
633.00	7.03	100.86	632.12	-4.77	21.29	-4.82	1.71	1.66	-3.56	
665.00	7.87	97.87	663.85	-5.44	25.38	-5.49	2.89	2.63	-9.34	
696.00	8.70	98.75	694.52	-6.08	29.80	-6.15	2.71	2.68	2.84	
728.00	9.32	99.19	726.13	-6.87	34.75	-6.94	1.95	1.94	1.38	
759.00	9.76	100.77	756.70	-7.76	39.81	-7.85	1.65	1.42	5.10	
791.00	10.41	103.41	788.21	-8.93	45.29	-9.04	2.49	2.03	8.25	
823.00	10.63	102.26	819.67	-10.23	50.98	-10.35	0.95	0.69	-3.59	
854.00	11.47	101.21	850.09	-11.44	56.80	-11.57	2.79	2.71	-3.39	
886.00	12.17	101.21	881.41	-12.71	63.23	-12.86	2.19	2.19	0.00	
918.00	12.35	99.27	912.69	-13.92	69.91	-14.08	1.40	0.56	-6.06	
949.00	12.66	98.22	942.95	-14.94	76.55	-15.11	1.24	1.00	-3.39	
981.00	13.23	100.24	974.14	-16.09	83.62	-16.28	2.27	1.78	6.31	
1,012.00	14.02	101.30	1,004.26	-17.46	90.80	-17.66	2.67	2.55	3.42	
1,076.00	15.25	100.86	1,066.19	-20.56	106.67	-20.80	1.93	1.92	-0.69	
1,107.00	15.86	102.00	1,096.05	-22.21	114.81	-22.47	2.20	1.97	3.68	
1,139.00	16.96	102.00	1,126.75	-24.09	123.66	-24.37	3.44	3.44	0.00	
1,171.00	17.89	103.85	1,157.28	-26.24	132.99	-26.54	3.38	2.91	5.78	
1,202.00	17.71	103.14	1,186.79	-28.45	142.21	-28.77	0.91	-0.58	-2.29	
1,234.00	17.14	102.44	1,217.33	-30.57	151.55	-30.92	1.90	-1.78	-2.19	
1,266.00	16.74	99.63	1,247.94	-32.36	160.70	-32.72	2.85	-1.25	-8.78	
1,297.00	17.18	99.71	1,277.59	-33.88	169.61	-34.26	1.42	1.42	0.26	
1,329.00	17.53	101.30	1,308.13	-35.62	179.00	-36.03	1.84	1.09	4.97	
1,361.00	17.18	101.21	1,338.68	-37.48	188.36	-37.91	1.10	-1.09	-0.28	
1,392.00	17.49	102.26	1,368.27	-39.36	197.40	-39.81	1.42	1.00	3.39	
1,424.00	17.89	103.76	1,398.75	-41.55	206.88	-42.02	1.89	1.25	4.69	
1,456.00	17.84	101.74	1,429.21	-43.72	216.45	-44.21	1.94	-0.16	-6.31	
1,487.00	17.89	100.86	1,458.72	-45.58	225.78	-46.09	0.89	0.16	-2.84	
1,519.00	18.76	102.18	1,489.09	-47.59	235.63	-48.13	3.01	2.72	4.13	
1,551.00	19.07	102.35	1,519.37	-49.80	245.77	-50.35	0.98	0.97	0.53	
1,583.00	19.69	102.00	1,549.55	-52.04	256.15	-52.62	1.97	1.94	-1.09	
1,614.00	20.17	101.30	1,578.70	-54.17	266.50	-54.77	1.73	1.55	-2.26	
1,645.00	19.82	102.26	1,607.83	-56.33	276.87	-56.96	1.55	-1.13	3.10	
1,677.00	19.29	103.14	1,637.98	-58.69	287.32	-59.34	1.89	-1.66	2.75	
1,708.00	19.29	101.12	1,667.24	-60.84	297.33	-61.51	2.15	0.00	-6.52	
1,740.00	19.42	100.42	1,697.43	-62.82	307.75	-63.52	0.83	0.41	-2.19	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well Norden 1C-14HZ
<b>Project:</b>	US Rockies Wattenberg Planning UTM83	<b>TVD Reference:</b>	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
<b>Site:</b>	Norden 15-14HZ Pad	<b>MD Reference:</b>	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
<b>Well:</b>	Norden 1C-14HZ	<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)	
1,772.00	18.68	101.91	1,727.68	-64.84	318.00	-65.56	2.77	-2.31	4.66	
1,804.00	18.28	102.61	1,758.03	-66.99	327.91	-67.74	1.43	-1.25	2.19	
1,835.00	18.19	101.38	1,787.47	-69.01	337.40	-69.77	1.28	-0.29	-3.97	
<b>Last Total MWD Survey</b>										
1,953.00	20.86	100.42	1,898.68	-76.44	376.12	-77.30	2.28	2.26	-0.81	
<b>First SDI MWD Production Survey</b>										
2,039.00	21.18	97.46	1,978.96	-81.23	406.59	-82.15	1.29	0.37	-3.44	
2,124.00	22.13	94.96	2,057.96	-84.61	437.77	-85.60	1.56	1.12	-2.94	
2,294.00	23.45	92.45	2,214.69	-88.82	503.47	-89.97	0.96	0.78	-1.48	
2,379.00	21.96	92.09	2,293.10	-90.13	536.25	-91.34	1.76	-1.75	-0.42	
2,466.00	20.51	90.13	2,374.19	-90.75	567.75	-92.04	1.86	-1.67	-2.25	
2,553.00	19.86	86.83	2,455.85	-89.97	597.74	-91.33	1.51	-0.75	-3.79	
2,639.00	21.35	82.83	2,536.35	-87.21	627.87	-88.63	2.38	1.73	-4.65	
2,723.00	22.22	84.82	2,614.35	-83.87	658.86	-85.36	1.36	1.04	2.37	
2,808.00	23.37	82.23	2,692.71	-80.14	691.57	-81.70	1.80	1.35	-3.05	
2,895.00	24.77	83.21	2,772.15	-75.65	726.76	-77.30	1.67	1.61	1.13	
2,980.00	24.55	83.79	2,849.40	-71.63	762.00	-73.36	0.38	-0.26	0.68	
3,065.00	23.67	85.24	2,926.98	-68.31	796.56	-70.11	1.25	-1.04	1.71	
3,150.00	23.04	85.60	3,005.02	-65.61	830.15	-67.50	0.76	-0.74	0.42	
3,235.00	21.04	84.75	3,083.80	-62.94	861.93	-64.90	2.38	-2.35	-1.00	
3,320.00	21.63	91.18	3,162.99	-61.87	892.79	-63.89	2.84	0.69	7.56	
3,405.00	21.04	92.27	3,242.16	-62.80	923.70	-64.89	0.84	-0.69	1.28	
3,490.00	20.15	89.84	3,321.73	-63.36	953.59	-65.52	1.45	-1.05	-2.86	
3,575.00	23.80	91.98	3,400.54	-63.91	985.38	-66.15	4.40	4.29	2.52	
3,660.00	22.72	93.28	3,478.63	-65.44	1,018.91	-67.75	1.41	-1.27	1.53	
3,745.00	20.43	90.94	3,557.67	-66.63	1,050.14	-69.01	2.88	-2.69	-2.75	
3,829.00	21.22	91.31	3,636.18	-67.21	1,079.99	-69.66	0.95	0.94	0.44	
3,914.00	22.13	88.97	3,715.17	-67.28	1,111.38	-69.80	1.48	1.07	-2.75	
3,999.00	19.88	88.30	3,794.52	-66.56	1,141.84	-69.15	2.66	-2.65	-0.79	
4,083.00	17.40	86.22	3,874.11	-65.31	1,168.65	-67.96	3.06	-2.95	-2.48	
4,168.00	19.01	86.29	3,954.85	-63.57	1,195.15	-66.29	1.89	1.89	0.08	
4,253.00	18.68	87.81	4,035.30	-62.16	1,222.57	-64.93	0.70	-0.39	1.79	
4,338.00	16.42	86.12	4,116.34	-60.83	1,248.16	-63.66	2.73	-2.66	-1.99	
4,422.00	14.23	86.15	4,197.34	-59.33	1,270.31	-62.21	2.61	-2.61	0.04	
4,507.00	13.16	82.77	4,279.93	-57.41	1,290.33	-60.34	1.57	-1.26	-3.98	
4,592.00	13.49	84.14	4,362.64	-55.18	1,309.79	-58.15	0.54	0.39	1.61	
4,676.00	11.95	83.90	4,444.58	-53.25	1,328.19	-56.27	1.83	-1.83	-0.29	
4,763.00	9.16	83.23	4,530.09	-51.48	1,344.02	-54.53	3.21	-3.21	-0.77	
4,849.00	7.58	96.38	4,615.18	-51.30	1,356.46	-54.38	2.87	-1.84	15.29	
4,934.00	5.01	109.08	4,699.67	-53.14	1,365.54	-56.24	3.42	-3.02	14.94	
5,018.00	2.20	107.99	4,783.49	-54.84	1,370.54	-57.95	3.35	-3.35	-1.30	
5,103.00	1.41	114.14	4,868.45	-55.77	1,373.05	-58.89	0.96	-0.93	7.24	
5,188.00	0.73	25.22	4,953.44	-55.71	1,374.23	-58.83	1.85	-0.80	-104.61	
5,274.00	5.19	300.11	5,039.32	-53.26	1,371.10	-56.37	6.02	5.19	-98.97	

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<b>Site:</b>	Norden 15-14HZ Pad	<b>MD Reference:</b>	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
<b>Well:</b>	Norden 1C-14HZ	<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)	
5,359.00	5.13	297.31	5,123.97	-49.59	1,364.40	-52.68	0.30	-0.07	-3.29	
5,445.00	5.67	305.68	5,209.59	-45.34	1,357.53	-48.42	1.11	0.63	9.73	
5,460.48	6.03	308.73	5,224.99	-44.39	1,356.27	-47.47	3.07	2.33	19.69	
<b>Enter Land Box: 5460.48' MD &amp; 5224.99' TVD</b>										
5,530.00	7.80	318.74	5,294.01	-38.56	1,350.31	-41.62	3.07	2.55	14.40	
5,615.00	7.77	321.62	5,378.22	-29.72	1,342.94	-32.77	0.46	-0.04	3.39	
5,699.00	9.68	328.95	5,461.25	-19.22	1,335.77	-22.25	2.63	2.27	8.73	
5,787.00	11.32	335.11	5,547.78	-5.04	1,328.32	-8.06	2.26	1.86	7.00	
5,872.00	12.29	342.29	5,630.98	11.14	1,322.06	8.15	2.07	1.14	8.45	
5,958.00	14.33	351.61	5,714.68	30.40	1,317.72	27.41	3.44	2.37	10.84	
6,044.00	15.58	355.31	5,797.77	52.44	1,315.22	49.45	1.83	1.45	4.30	
6,129.00	15.16	357.62	5,879.73	74.92	1,313.83	71.94	0.87	-0.49	2.72	
6,214.00	17.00	357.43	5,961.40	98.44	1,312.81	95.46	2.17	2.16	-0.22	
6,299.00	18.18	359.68	6,042.42	124.11	1,312.18	121.14	1.60	1.39	2.65	
6,384.00	20.58	0.48	6,122.60	152.32	1,312.23	149.34	2.84	2.82	0.94	
6,471.00	21.43	358.55	6,203.82	183.50	1,311.95	180.52	1.26	0.98	-2.22	
6,556.00	21.07	357.12	6,283.04	214.28	1,310.79	211.31	0.74	-0.42	-1.68	
6,641.00	21.18	358.60	6,362.33	244.89	1,309.65	241.92	0.64	0.13	1.74	
6,726.00	21.25	0.21	6,441.57	275.64	1,309.33	272.67	0.69	0.08	1.89	
6,811.00	23.06	355.04	6,520.30	307.64	1,307.95	304.67	3.13	2.13	-6.08	
6,896.00	23.09	355.45	6,598.50	340.84	1,305.19	337.88	0.19	0.04	0.48	
6,982.00	21.87	356.66	6,677.96	373.64	1,302.92	370.68	1.52	-1.42	1.41	
7,040.00	19.37	355.59	6,732.24	394.02	1,301.55	391.06	4.36	-4.31	-1.84	
7,100.00	19.09	357.09	6,788.89	413.74	1,300.28	410.79	0.95	-0.47	2.50	
<b>Intermediate Casing</b>										
7,169.00	18.78	358.87	6,854.16	436.11	1,299.49	433.16	0.95	-0.45	2.58	
7,233.00	22.94	5.25	6,913.96	458.84	1,300.43	455.89	7.39	6.49	9.97	
<b>Curve KOP</b>										
7,255.00	24.41	6.96	6,934.11	467.62	1,301.37	464.67	7.39	6.70	7.76	
7,256.00	24.50	7.03	6,935.02	468.03	1,301.42	465.08	9.43	9.04	6.53	
<b>First SDI MWD Curve Survey</b>										
7,340.00	32.17	11.27	7,008.91	507.31	1,307.94	504.34	9.43	9.13	5.05	
7,424.00	39.63	3.14	7,076.94	556.09	1,313.78	553.11	10.52	8.88	-9.68	
7,510.00	44.65	1.41	7,140.69	613.72	1,316.03	610.74	5.99	5.84	-2.01	
7,595.00	50.66	357.40	7,197.94	676.49	1,315.28	673.50	7.88	7.07	-4.72	
7,680.00	56.96	356.90	7,248.10	744.97	1,311.85	741.99	7.43	7.41	-0.59	
7,767.00	58.19	356.95	7,294.75	818.30	1,307.91	815.33	1.41	1.41	0.06	
7,851.00	57.86	0.63	7,339.24	889.52	1,306.41	886.55	3.74	-0.39	4.38	
7,936.00	57.20	0.58	7,384.87	961.23	1,307.16	958.26	0.78	-0.78	-0.06	
8,022.00	61.88	1.74	7,428.46	1,035.32	1,308.68	1,032.35	5.56	5.44	1.35	
8,106.00	67.84	2.88	7,464.13	1,111.26	1,311.76	1,108.28	7.20	7.10	1.36	
8,192.00	67.23	2.45	7,496.99	1,190.65	1,315.46	1,187.66	0.85	-0.71	-0.50	
8,247.00	70.90	0.99	7,516.64	1,241.99	1,316.99	1,239.00	7.12	6.68	-2.66	
<b>Landing Point : 1744' FSL 504'FEL Sec 14</b>										

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well Norden 1C-14HZ
<b>Project:</b>	US Rockies Wattenberg Planning UTM83	<b>TVD Reference:</b>	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
<b>Site:</b>	Norden 15-14HZ Pad	<b>MD Reference:</b>	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
<b>Well:</b>	Norden 1C-14HZ	<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)
8,277.00	72.91	0.22	7,525.96	1,270.50	1,317.29	1,267.51	7.12	6.69	-2.56
8,324.23	77.13	0.80	7,538.16	1,316.11	1,317.70	1,313.12	9.01	8.93	1.23
<b>Cross 460' Line: 8324.23' MD &amp; 7538.16' TVD 1818' FSL 503' FEL</b>									
8,363.00	80.59	1.26	7,545.65	1,354.14	1,318.39	1,351.15	9.01	8.93	1.19
8,448.00	91.34	1.06	7,551.63	1,438.79	1,320.10	1,435.79	12.65	12.65	-0.24
8,533.00	92.55	1.20	7,548.74	1,523.72	1,321.77	1,520.72	1.43	1.42	0.16
8,618.00	90.37	358.60	7,546.58	1,608.68	1,321.62	1,605.68	3.99	-2.56	-3.06
8,704.00	90.94	358.14	7,545.59	1,694.64	1,319.18	1,691.64	0.85	0.66	-0.53
8,789.00	91.01	357.61	7,544.15	1,779.57	1,316.03	1,776.58	0.63	0.08	-0.62
8,874.00	91.07	357.12	7,542.60	1,864.46	1,312.12	1,861.48	0.58	0.07	-0.58
8,960.00	89.53	0.71	7,542.15	1,950.43	1,310.49	1,947.45	4.54	-1.79	4.17
9,045.00	89.13	1.27	7,543.15	2,035.41	1,311.96	2,032.43	0.81	-0.47	0.66
9,132.00	89.40	1.12	7,544.26	2,122.39	1,313.77	2,119.40	0.36	0.31	-0.17
9,217.00	89.30	0.88	7,545.23	2,207.37	1,315.26	2,204.38	0.31	-0.12	-0.28
9,303.00	90.37	0.77	7,545.48	2,293.36	1,316.50	2,290.36	1.25	1.24	-0.13
9,388.00	90.91	0.90	7,544.53	2,378.34	1,317.73	2,375.35	0.65	0.64	0.15
9,473.00	91.04	0.81	7,543.08	2,463.32	1,319.00	2,460.32	0.19	0.15	-0.11
9,558.00	91.11	0.52	7,541.48	2,548.30	1,319.99	2,545.30	0.35	0.08	-0.34
9,644.00	90.80	359.81	7,540.05	2,634.29	1,320.24	2,631.28	0.90	-0.36	-0.83
9,731.00	91.31	0.14	7,538.45	2,721.27	1,320.20	2,718.27	0.70	0.59	0.38
9,816.00	91.74	359.85	7,536.19	2,806.24	1,320.19	2,803.24	0.61	0.51	-0.34
9,901.00	92.08	359.77	7,533.35	2,891.19	1,319.91	2,888.19	0.41	0.40	-0.09
9,987.00	91.34	1.52	7,530.79	2,977.15	1,320.88	2,974.14	2.21	-0.86	2.03
10,072.00	89.97	0.99	7,529.82	3,062.12	1,322.74	3,059.11	1.73	-1.61	-0.62
10,157.00	90.23	0.73	7,529.67	3,147.11	1,324.01	3,144.10	0.43	0.31	-0.31
10,242.00	90.00	0.50	7,529.50	3,232.10	1,324.93	3,229.09	0.38	-0.27	-0.27
10,328.00	90.30	0.21	7,529.27	3,318.10	1,325.46	3,315.08	0.49	0.35	-0.34
10,412.00	90.10	359.99	7,528.98	3,402.10	1,325.61	3,399.08	0.35	-0.24	-0.26
10,498.00	90.03	359.17	7,528.88	3,488.10	1,324.98	3,485.08	0.96	-0.08	-0.95
10,582.00	89.46	359.03	7,529.26	3,572.08	1,323.66	3,569.07	0.70	-0.68	-0.17
10,668.00	86.64	358.39	7,532.18	3,658.00	1,321.72	3,655.00	3.36	-3.28	-0.74
10,753.00	88.59	358.15	7,535.72	3,742.89	1,319.16	3,739.88	2.31	2.29	-0.28
10,838.00	90.60	357.90	7,536.32	3,827.83	1,316.23	3,824.83	2.38	2.36	-0.29
10,924.00	90.64	357.72	7,535.39	3,913.76	1,312.94	3,910.77	0.21	0.05	-0.21
11,009.00	90.80	357.66	7,534.32	3,998.69	1,309.52	3,995.71	0.20	0.19	-0.07
11,094.00	93.52	358.33	7,531.12	4,083.57	1,306.55	4,080.59	3.30	3.20	0.79
11,184.00	93.49	359.32	7,525.61	4,173.38	1,304.70	4,170.41	1.10	-0.03	1.10
11,269.00	91.11	5.46	7,522.20	4,258.19	1,308.25	4,255.21	7.74	-2.80	7.22
11,354.00	89.40	4.60	7,521.82	4,342.86	1,315.70	4,339.86	2.25	-2.01	-1.01
11,384.48	89.44	4.60	7,522.13	4,373.24	1,318.14	4,370.23	0.12	0.12	-0.01
<b>Cross 460' Line : 11384.48' MD &amp; 7522.13' TVD 460' FNL 491' FEL</b>									
11,439.00	89.50	4.59	7,522.64	4,427.58	1,322.51	4,424.57	0.12	0.12	-0.01
11,524.00	88.46	3.91	7,524.15	4,512.33	1,328.81	4,509.30	1.46	-1.22	-0.80
11,609.00	88.46	3.72	7,526.44	4,597.11	1,334.46	4,594.07	0.22	0.00	-0.22

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well Norden 1C-14HZ
<b>Project:</b>	US Rockies Wattenberg Planning UTM83	<b>TVD Reference:</b>	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
<b>Site:</b>	Norden 15-14HZ Pad	<b>MD Reference:</b>	GL 4951' & KB 17' @ 4968.00ft (Xtreme 24)
<b>Well:</b>	Norden 1C-14HZ	<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)	
11,731.00	88.93	3.86	7,529.21	4,718.81	1,342.52	4,715.75	0.40	0.39	0.11	
<b>Last SDI MWD Survey</b>										
11,795.00	88.93	3.86	7,530.41	4,782.66	1,346.83	4,779.59	0.00	0.00	0.00	
<b>Projection to TD : 55' FNL 462' FEL Sec 14</b>										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
126.00	126.00	0.85	0.17	First Total MWD Survey	
1,835.00	1,787.47	-69.01	337.40	Last Total MWD Survey	
1,953.00	1,898.68	-76.44	376.12	First SDI MWD Production Survey	
5,460.48	5,224.99	-44.39	1,356.27	Enter Land Box: 5460.48' MD & 5224.99' TVD	
7,100.00	6,788.89	413.74	1,300.28	Intermediate Casing	
7,233.00	6,913.96	458.84	1,300.43	Curve KOP	
7,256.00	6,935.02	468.03	1,301.42	First SDI MWD Curve Survey	
8,247.00	7,516.64	1,241.99	1,316.99	Landing Point : 1744' FSL 504'FEL Sec 14	
8,324.23	7,538.16	1,316.11	1,317.70	Cross 460' Line: 8324.23' MD & 7538.16' TVD 1818' FSL 503' FEL	
11,384.48	7,522.13	4,373.24	1,318.14	Cross 460' Line : 11384.48' MD & 7522.13' TVD 460' FNL 491' FEL	
11,731.00	7,529.21	4,718.81	1,342.52	Last SDI MWD Survey	
11,795.00	7,530.41	4,782.66	1,346.83	Projection to TD : 55' FNL 462' FEL Sec 14	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_