

US ROCKIES WATTENBERG PLANNING



Project: WELD-NAD83-UTMFT13N

Site: 4N-68W-26 Wilson Ranch 8-26HZ

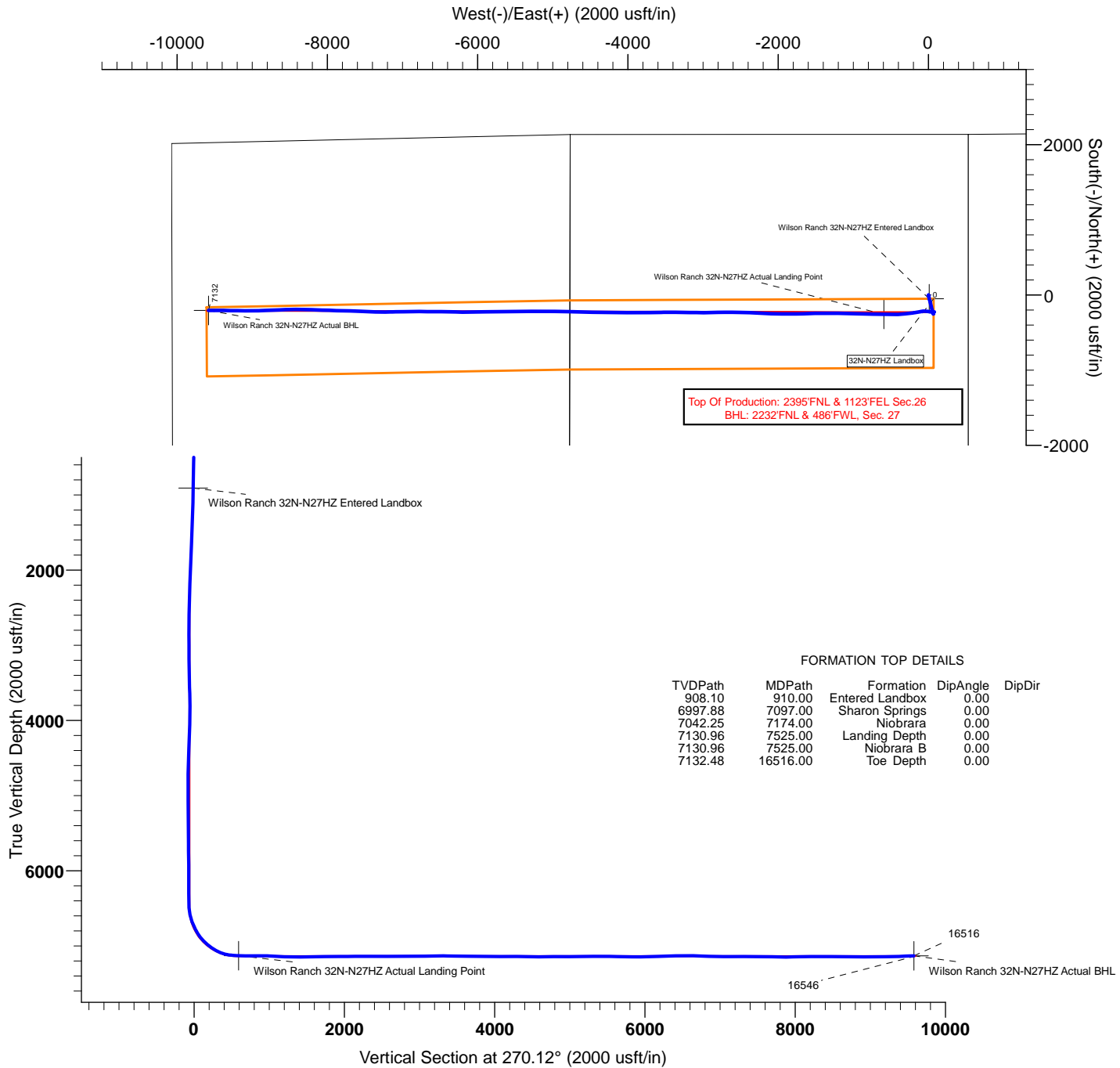
Well: Wilson Ranch 32N-N27HZ

Wellbore: Wilson Ranch 32N-N27HZ

Design: Actual Surveys

CASING DETAILS

TVD	MD	Name	Size
1829.83	1839.53	9 5/8	9-5/8
7132.48	16516.00	5 1/2	5-1/2



FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
908.10	910.00	Entered Landbox	0.00	
6997.88	7097.00	Sharon Springs	0.00	
7042.25	7174.00	Niobrara	0.00	
7130.96	7525.00	Landing Depth	0.00	
7130.96	7525.00	Niobrara B	0.00	
7132.48	16516.00	Toe Depth	0.00	

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Wilson Ranch 32N-N27HZ Entered Landbox	908.10	-49.68	11.23	14630846.21	1650853.53	40.285901	-104.962576	Point
Wilson Ranch 32N-N27HZ Actual Landing Point	7130.96	-257.37	-593.81	14630638.26	1650248.58	40.285330	-104.964745	Point
Wilson Ranch 32N-N27HZ Actual BHL	7132.52	-205.30	-9580.65	14630686.54	1641261.71	40.285468	-104.996970	Point



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WELD-NAD83-UTMFT13N

4N-68W-26 Wilson Ranch 8-26HZ

Wilson Ranch 32N-N27HZ

Wilson Ranch 32N-N27HZ

Design: Actual Surveys

Standard Survey Report

09 December, 2015

PDD

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Wilson Ranch 32N-N27HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	4992' GL + 20' KB @ 5012.00usft (P462)
Site:	4N-68W-26 Wilson Ranch 8-26HZ	MD Reference:	4992' GL + 20' KB @ 5012.00usft (P462)
Well:	Wilson Ranch 32N-N27HZ	North Reference:	True
Wellbore:	Wilson Ranch 32N-N27HZ	Survey Calculation Method:	Minimum Curvature
Design:	Actual Surveys	Database:	EDM 5000.1 Single User Db

Project	WELD-NAD83-UTMFT13N		
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		4N-68W-26 Wilson Ranch 8-26HZ, centered on 3N-25HZ						
Site Position:		Northing:	14,630,963.58	usft	Latitude:	40.286223		
From:	Lat/Long	Easting:	1,650,762.21	usft	Longitude:	-104.962903		
Position Uncertainty:	0.00	usft	Slot Radius:	13-3/16	"	Grid Convergence:	0.02	°

Well	Wilson Ranch 32N-N27HZ, 2138FNL 529FEL					
Well Position	+N/-S	0.00 usft	Northing:	14,630,895.88 usft	Latitude:	40.286037
	+E/-W	0.00 usft	Easting:	1,650,842.27 usft	Longitude:	-104.962616
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,992.00 usft

Wellbore	Wilson Ranch 32N-N27HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/10/2015	8.36	66.77	52,577

Design	Actual Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	270.12	

Survey Program	Date	12/9/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
98.00	1,791.00	SDI MWD Surveys (Wilson Ranch 32N-N2	APC_ISCWSA REV 2 MWD	Fixed:v2:standard declination	
1,873.00	16,449.00	PDD MWD+IFR+MSA Surveys (Wilson Ra	APC_ISCWSA REV 2 MWD+	Fixed:v2:Rockies, crustal dec + 3-axis correction	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
98.00	0.05	180.75	98.00	-0.04	0.00	0.00	0.05	0.05	0.00	
189.00	0.97	169.58	189.00	-0.84	0.14	-0.14	1.01	1.01	-12.27	
280.00	2.35	157.61	279.96	-3.32	0.99	-1.00	1.56	1.52	-13.15	
386.00	3.32	168.77	385.83	-8.34	2.41	-2.43	1.05	0.92	10.53	
476.00	4.57	164.93	475.61	-14.36	3.85	-3.88	1.42	1.39	-4.27	
566.00	4.73	165.13	565.31	-21.41	5.74	-5.78	0.18	0.18	0.22	
656.00	4.72	167.76	655.01	-28.62	7.48	-7.54	0.24	-0.01	2.92	
746.00	4.69	170.05	744.70	-35.86	8.90	-8.97	0.21	-0.03	2.54	
836.00	4.94	170.53	834.39	-43.30	10.17	-10.26	0.28	0.28	0.53	

PDD
Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Wilson Ranch 32N-N27HZ
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Site:	4N-68W-26 Wilson Ranch 8-26HZ	MD Reference:	4992' GL + 20' KB @ 5012.00usft (P462)
Well:	Wilson Ranch 32N-N27HZ	North Reference:	True
Wellbore:	Wilson Ranch 32N-N27HZ	Survey Calculation Method:	Minimum Curvature
Design:	Actual Surveys	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
926.00	5.12	170.51	924.04	-51.09	11.47	-11.58	0.20	0.20	-0.02
1,016.00	5.36	164.80	1,013.67	-59.11	13.23	-13.36	0.64	0.27	-6.34
1,106.00	5.33	163.65	1,103.27	-67.17	15.51	-15.65	0.12	-0.03	-1.28
1,196.00	6.08	162.88	1,192.83	-75.74	18.09	-18.25	0.84	0.83	-0.86
1,287.00	6.45	163.79	1,283.28	-85.25	20.94	-21.12	0.42	0.41	1.00
1,377.00	6.66	164.74	1,372.70	-95.14	23.72	-23.92	0.26	0.23	1.06
1,467.00	7.20	166.30	1,462.04	-105.66	26.43	-26.65	0.64	0.60	1.73
1,557.00	8.28	168.26	1,551.22	-117.48	29.09	-29.33	1.24	1.20	2.18
1,647.00	9.41	167.10	1,640.14	-131.00	32.05	-32.32	1.27	1.26	-1.29
1,737.00	10.11	163.13	1,728.84	-145.73	35.98	-36.29	1.08	0.78	-4.41
1,791.00	9.96	165.36	1,782.02	-154.78	38.54	-38.86	0.77	-0.28	4.13
1,873.00	9.65	166.52	1,862.82	-168.33	41.93	-42.29	0.45	-0.38	1.41
2,064.00	7.45	167.03	2,051.68	-195.97	48.44	-48.85	1.15	-1.15	0.27
2,253.00	6.61	160.17	2,239.27	-218.14	54.88	-55.34	0.63	-0.44	-3.63
2,442.00	6.46	159.05	2,427.04	-238.30	62.38	-62.88	0.10	-0.08	-0.59
2,632.00	1.32	204.95	2,616.56	-250.28	65.28	-65.80	2.96	-2.71	24.16
2,823.00	3.06	11.17	2,807.49	-247.27	65.34	-65.85	2.28	0.91	87.03
3,012.00	1.68	18.38	2,996.33	-239.69	67.19	-67.69	0.75	-0.73	3.81
3,200.00	1.69	312.46	3,184.26	-235.20	66.01	-66.50	0.98	0.01	-35.06
3,387.00	1.18	308.07	3,371.20	-232.16	62.46	-62.95	0.28	-0.27	-2.35
3,575.00	0.80	284.74	3,559.17	-230.63	59.67	-60.15	0.29	-0.20	-12.41
3,760.00	0.61	290.48	3,744.16	-229.95	57.50	-57.98	0.11	-0.10	3.10
3,949.00	0.94	271.19	3,933.14	-229.57	55.00	-55.48	0.22	0.17	-10.21
4,137.00	2.54	89.35	4,121.10	-229.49	57.63	-58.11	1.85	0.85	94.77
4,325.00	2.08	88.93	4,308.94	-229.38	65.21	-65.69	0.24	-0.24	-0.22
4,514.00	2.34	77.01	4,497.80	-228.45	72.39	-72.87	0.28	0.14	-6.31
4,705.00	1.23	57.93	4,688.71	-226.48	77.93	-78.41	0.65	-0.58	-9.99
4,895.00	0.38	254.83	4,878.70	-225.57	79.05	-79.52	0.84	-0.45	-85.84
5,086.00	0.37	271.55	5,069.69	-225.71	77.82	-78.30	0.06	-0.01	8.75
5,275.00	0.55	280.96	5,258.69	-225.53	76.32	-76.79	0.10	0.10	4.98
5,465.00	0.45	278.09	5,448.68	-225.25	74.69	-75.16	0.05	-0.05	-1.51
5,655.00	0.67	253.39	5,638.67	-225.46	72.89	-73.36	0.17	0.12	-13.00
5,750.00	0.54	237.06	5,733.66	-225.86	71.98	-72.45	0.23	-0.14	-17.19
5,938.00	0.28	230.60	5,921.66	-226.64	70.88	-71.35	0.14	-0.14	-3.44
6,128.00	0.32	234.97	6,111.66	-227.23	70.09	-70.56	0.02	0.02	2.30
6,319.00	0.15	169.02	6,302.66	-227.79	69.70	-70.17	0.15	-0.09	-34.53
6,415.00	0.32	252.46	6,398.66	-227.99	69.47	-69.94	0.35	0.18	86.92
6,510.00	3.46	266.51	6,493.59	-228.25	66.35	-66.83	3.32	3.31	14.79
6,605.00	12.75	274.20	6,587.54	-227.65	53.00	-53.48	9.82	9.78	8.09
6,700.00	21.05	280.91	6,678.37	-223.65	25.75	-26.21	8.96	8.74	7.06
6,795.00	25.66	279.52	6,765.56	-217.01	-11.31	10.86	4.89	4.85	-1.46
6,890.00	33.42	267.09	6,848.23	-214.93	-57.84	57.39	10.37	8.17	-13.08
6,985.00	42.88	259.69	6,922.89	-222.07	-115.93	115.47	11.04	9.96	-7.79

PDD

Survey Report

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Well:	Wilson Ranch 32N-N27HZ	North Reference:	True
Wellbore:	Wilson Ranch 32N-N27HZ	Survey Calculation Method:	Minimum Curvature
Design:	Actual Surveys	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
7,080.00	51.47	260.36	6,987.41	-234.10	-184.49	184.00	9.06	9.04	0.71	
7,174.00	57.13	264.05	7,042.25	-244.36	-260.08	259.57	6.81	6.02	3.93	
7,269.00	66.75	264.02	7,086.88	-253.06	-343.37	342.83	10.13	10.13	-0.03	
7,362.00	78.73	269.53	7,114.45	-257.90	-431.84	431.30	14.06	12.88	5.92	
7,458.00	85.82	270.49	7,127.34	-257.88	-526.91	526.37	7.45	7.39	1.00	
7,553.00	88.89	270.33	7,131.73	-257.20	-621.79	621.25	3.24	3.23	-0.17	
7,647.00	90.68	271.66	7,132.08	-255.57	-715.77	715.24	2.37	1.90	1.41	
7,742.00	89.11	272.25	7,132.25	-252.33	-810.72	810.18	1.77	-1.65	0.62	
7,837.00	90.30	272.12	7,132.74	-248.71	-905.64	905.12	1.26	1.25	-0.14	
7,933.00	86.98	271.51	7,135.02	-245.67	-1,001.55	1,001.04	3.52	-3.46	-0.64	
8,028.00	87.05	270.55	7,139.97	-243.96	-1,096.41	1,095.90	1.01	0.07	-1.01	
8,124.00	86.96	270.47	7,144.98	-243.11	-1,192.27	1,191.76	0.13	-0.09	-0.08	
8,218.00	89.43	269.45	7,147.94	-243.17	-1,286.22	1,285.71	2.84	2.63	-1.09	
8,313.00	90.41	269.78	7,148.08	-243.81	-1,381.22	1,380.70	1.09	1.03	0.35	
8,409.00	90.86	269.02	7,147.01	-244.82	-1,477.20	1,476.69	0.92	0.47	-0.79	
8,503.00	90.32	268.00	7,146.05	-247.26	-1,571.16	1,570.64	1.23	-0.57	-1.09	
8,598.00	90.56	269.27	7,145.32	-249.53	-1,666.13	1,665.61	1.36	0.25	1.34	
8,693.00	91.85	268.53	7,143.32	-251.35	-1,761.09	1,760.56	1.57	1.36	-0.78	
8,788.00	90.13	270.80	7,141.68	-251.90	-1,856.07	1,855.53	3.00	-1.81	2.39	
8,883.00	89.84	269.39	7,141.70	-251.75	-1,951.06	1,950.53	1.52	-0.31	-1.48	
8,978.00	90.84	272.17	7,141.14	-250.45	-2,046.04	2,045.51	3.11	1.05	2.93	
9,073.00	91.59	273.33	7,139.12	-245.90	-2,140.91	2,140.39	1.45	0.79	1.22	
9,166.00	89.45	272.69	7,138.28	-241.01	-2,233.77	2,233.26	2.40	-2.30	-0.69	
9,260.00	90.35	272.85	7,138.44	-236.47	-2,327.66	2,327.16	0.97	0.96	0.17	
9,355.00	89.93	271.94	7,138.21	-232.50	-2,422.58	2,422.08	1.05	-0.44	-0.96	
9,450.00	89.86	270.88	7,138.39	-230.16	-2,517.55	2,517.06	1.12	-0.07	-1.12	
9,545.00	90.33	270.61	7,138.23	-228.93	-2,612.54	2,612.05	0.57	0.49	-0.28	
9,639.00	89.61	269.44	7,138.28	-228.89	-2,706.53	2,706.05	1.46	-0.77	-1.24	
9,734.00	90.26	268.62	7,138.38	-230.50	-2,801.52	2,801.03	1.10	0.68	-0.86	
9,829.00	89.82	267.60	7,138.32	-233.63	-2,896.47	2,895.97	1.17	-0.46	-1.07	
9,924.00	90.42	270.91	7,138.12	-234.86	-2,991.44	2,990.95	3.54	0.63	3.48	
10,019.00	90.97	270.93	7,136.97	-233.34	-3,086.43	3,085.93	0.58	0.58	0.02	
10,113.00	91.61	270.38	7,134.85	-232.26	-3,180.39	3,179.90	0.90	0.68	-0.59	
10,206.00	90.34	271.22	7,133.27	-230.97	-3,273.37	3,272.88	1.64	-1.37	0.90	
10,300.00	88.49	270.97	7,134.23	-229.17	-3,367.34	3,366.86	1.99	-1.97	-0.27	
10,394.00	89.07	270.01	7,136.23	-228.37	-3,461.32	3,460.83	1.19	0.62	-1.02	
10,488.00	89.88	267.28	7,137.09	-230.59	-3,555.28	3,554.79	3.03	0.86	-2.90	
10,582.00	88.59	269.82	7,138.35	-232.97	-3,649.23	3,648.73	3.03	-1.37	2.70	
10,676.00	89.25	269.60	7,140.12	-233.44	-3,743.21	3,742.71	0.74	0.70	-0.23	
10,768.00	89.92	269.31	7,140.78	-234.32	-3,835.20	3,834.70	0.79	0.73	-0.32	
10,861.00	90.31	270.76	7,140.60	-234.26	-3,928.20	3,927.70	1.61	0.42	1.56	
10,956.00	89.43	270.16	7,140.81	-233.50	-4,023.20	4,022.70	1.12	-0.93	-0.63	
11,050.00	89.82	269.92	7,141.43	-233.43	-4,117.19	4,116.70	0.49	0.41	-0.26	

PDD

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Wilson Ranch 32N-N27HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	4992' GL + 20' KB @ 5012.00usft (P462)
Site:	4N-68W-26 Wilson Ranch 8-26HZ	MD Reference:	4992' GL + 20' KB @ 5012.00usft (P462)
Well:	Wilson Ranch 32N-N27HZ	North Reference:	True
Wellbore:	Wilson Ranch 32N-N27HZ	Survey Calculation Method:	Minimum Curvature
Design:	Actual Surveys	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,144.00	90.28	269.45	7,141.35	-233.95	-4,211.19	4,210.69	0.70	0.49	-0.50
11,238.00	89.06	271.72	7,141.89	-232.99	-4,305.18	4,304.68	2.74	-1.30	2.41
11,333.00	88.75	271.82	7,143.70	-230.06	-4,400.11	4,399.62	0.34	-0.33	0.11
11,429.00	89.12	271.48	7,145.49	-227.29	-4,496.06	4,495.57	0.52	0.39	-0.35
11,523.00	89.76	271.67	7,146.41	-224.71	-4,590.02	4,589.54	0.71	0.68	0.20
11,619.00	90.81	271.14	7,145.93	-222.36	-4,685.99	4,685.51	1.23	1.09	-0.55
11,714.00	91.56	270.87	7,143.96	-220.69	-4,780.95	4,780.48	0.84	0.79	-0.28
11,809.00	89.23	271.28	7,143.31	-218.91	-4,875.92	4,875.45	2.49	-2.45	0.43
11,904.00	90.08	270.82	7,143.88	-217.17	-4,970.90	4,970.44	1.02	0.89	-0.48
11,999.00	91.11	270.50	7,142.89	-216.07	-5,065.89	5,065.43	1.14	1.08	-0.34
12,094.00	90.25	269.37	7,141.77	-216.18	-5,160.88	5,160.42	1.49	-0.91	-1.19
12,189.00	91.82	269.01	7,140.05	-217.52	-5,255.85	5,255.39	1.70	1.65	-0.38
12,284.00	89.95	270.24	7,138.58	-218.14	-5,350.84	5,350.37	2.36	-1.97	1.29
12,380.00	89.91	270.26	7,138.70	-217.72	-5,446.83	5,446.37	0.05	-0.04	0.02
12,474.00	87.69	269.89	7,140.67	-217.60	-5,540.81	5,540.34	2.39	-2.36	-0.39
12,569.00	88.51	269.29	7,143.82	-218.28	-5,635.75	5,635.28	1.07	0.86	-0.63
12,663.00	89.07	268.82	7,145.80	-219.83	-5,729.72	5,729.24	0.78	0.60	-0.50
12,758.00	90.06	268.75	7,146.53	-221.85	-5,824.69	5,824.21	1.04	1.04	-0.07
12,854.00	90.73	268.84	7,145.86	-223.86	-5,920.67	5,920.19	0.70	0.70	0.09
12,948.00	91.30	268.32	7,144.20	-226.19	-6,014.62	6,014.14	0.82	0.61	-0.55
13,042.00	90.44	270.34	7,142.77	-227.29	-6,108.60	6,108.11	2.34	-0.91	2.15
13,136.00	91.86	270.39	7,140.88	-226.69	-6,202.58	6,202.09	1.51	1.51	0.05
13,229.00	92.50	271.27	7,137.35	-225.35	-6,295.50	6,295.01	1.17	0.69	0.95
13,324.00	92.75	271.04	7,133.00	-223.43	-6,390.38	6,389.90	0.36	0.26	-0.24
13,418.00	89.80	270.81	7,130.90	-221.92	-6,484.33	6,483.85	3.15	-3.14	-0.24
13,511.00	90.14	270.50	7,130.95	-220.85	-6,577.33	6,576.85	0.49	0.37	-0.33
13,603.00	87.46	270.32	7,132.88	-220.20	-6,669.30	6,668.82	2.92	-2.91	-0.20
13,696.00	88.11	270.21	7,136.47	-219.77	-6,762.23	6,761.75	0.71	0.70	-0.12
13,789.00	88.41	269.63	7,139.30	-219.90	-6,855.18	6,854.71	0.70	0.32	-0.62
13,881.00	88.88	269.14	7,141.47	-220.88	-6,947.15	6,946.67	0.74	0.51	-0.53
13,975.00	89.44	268.98	7,142.85	-222.43	-7,041.13	7,040.65	0.62	0.60	-0.17
14,069.00	89.81	267.96	7,143.47	-224.94	-7,135.09	7,134.60	1.15	0.39	-1.09
14,161.00	89.84	270.51	7,143.75	-226.16	-7,227.07	7,226.58	2.77	0.03	2.77
14,254.00	90.79	270.56	7,143.24	-225.30	-7,320.07	7,319.58	1.02	1.02	0.05
14,348.00	89.70	272.69	7,142.83	-222.63	-7,414.02	7,413.54	2.55	-1.16	2.27
14,441.00	90.62	272.43	7,142.58	-218.48	-7,506.93	7,506.45	1.03	0.99	-0.28
14,535.00	87.95	272.21	7,143.75	-214.67	-7,600.84	7,600.37	2.85	-2.84	-0.23
14,630.00	88.46	271.64	7,146.72	-211.48	-7,695.73	7,695.27	0.80	0.54	-0.60
14,723.00	89.57	271.58	7,148.32	-208.87	-7,788.68	7,788.23	1.20	1.19	-0.06
14,816.00	90.65	271.67	7,148.14	-206.23	-7,881.64	7,881.19	1.17	1.16	0.10
14,910.00	91.79	271.62	7,146.14	-203.53	-7,975.58	7,975.14	1.21	1.21	-0.05
15,002.00	90.15	271.90	7,144.59	-200.71	-8,067.52	8,067.08	1.81	-1.78	0.30
15,095.00	90.07	272.18	7,144.41	-197.40	-8,160.46	8,160.03	0.31	-0.09	0.30
15,188.00	90.90	271.67	7,143.62	-194.27	-8,253.41	8,252.98	1.05	0.89	-0.55

PDD

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Wilson Ranch 32N-N27HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	4992' GL + 20' KB @ 5012.00usft (P462)
Site:	4N-68W-26 Wilson Ranch 8-26HZ	MD Reference:	4992' GL + 20' KB @ 5012.00usft (P462)
Well:	Wilson Ranch 32N-N27HZ	North Reference:	True
Wellbore:	Wilson Ranch 32N-N27HZ	Survey Calculation Method:	Minimum Curvature
Design:	Actual Surveys	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,282.00	92.04	271.59	7,141.21	-191.60	-8,347.34	8,346.92	1.22	1.21	-0.09
15,376.00	88.91	268.38	7,140.43	-191.63	-8,441.31	8,440.89	4.77	-3.33	-3.41
15,470.00	88.61	268.16	7,142.46	-194.46	-8,535.24	8,534.82	0.40	-0.32	-0.23
15,564.00	88.62	268.14	7,144.73	-197.50	-8,629.17	8,628.73	0.02	0.01	-0.02
15,658.00	89.48	268.11	7,146.29	-200.57	-8,723.10	8,722.66	0.92	0.91	-0.03
15,753.00	90.05	267.69	7,146.68	-204.05	-8,818.04	8,817.59	0.75	0.60	-0.44
15,848.00	90.73	267.62	7,146.04	-207.94	-8,912.95	8,912.50	0.72	0.72	-0.07
15,941.00	89.83	269.89	7,145.58	-209.96	-9,005.92	9,005.47	2.63	-0.97	2.44
16,036.00	89.92	271.36	7,145.79	-208.93	-9,100.92	9,100.46	1.55	0.09	1.55
16,128.00	90.73	270.81	7,145.27	-207.18	-9,192.90	9,192.44	1.06	0.88	-0.60
16,222.00	91.55	270.52	7,143.40	-206.09	-9,286.87	9,286.42	0.93	0.87	-0.31
16,316.00	92.25	270.08	7,140.28	-205.60	-9,380.82	9,380.37	0.88	0.74	-0.47
16,409.00	92.11	269.73	7,136.74	-205.75	-9,473.75	9,473.30	0.41	-0.15	-0.38
16,449.00	92.32	270.01	7,135.20	-205.85	-9,513.72	9,513.27	0.87	0.53	0.70
16,516.00	92.32	270.01	7,132.48	-205.83	-9,580.67	9,580.21	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Wilson Ranch 32N-N27H	0.00	0.00	908.10	-49.68	11.23	14,630,846.20	1,650,853.53	40.285901	-104.962576
- actual wellpath hits target center									
- Point									
Wilson Ranch 32N-N27H	0.00	0.00	7,130.96	-257.37	-593.81	14,630,638.26	1,650,248.58	40.285330	-104.964746
- actual wellpath hits target center									
- Point									
Wilson Ranch 32N-N27H	0.00	0.00	7,132.52	-205.30	-9,580.65	14,630,686.54	1,641,261.71	40.285468	-104.996970
- actual wellpath misses target center by 0.53usft at 16515.99usft MD (7132.49 TVD, -205.83 N, -9580.65 E)									
- Point									

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
910.00	908.10	Entered Landbox		0.00	
7,097.00	6,997.88	Sharon Springs		0.00	
7,174.00	7,042.25	Niobrara		0.00	
7,525.00	7,130.96	Niobrara B		0.00	
7,525.00	7,130.96	Landing Depth		0.00	
16,516.00	7,132.48	Toe Depth		0.00	

PDD
Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Wilson Ranch 32N-N27HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	4992' GL + 20' KB @ 5012.00usft (P462)
Site:	4N-68W-26 Wilson Ranch 8-26HZ	MD Reference:	4992' GL + 20' KB @ 5012.00usft (P462)
Well:	Wilson Ranch 32N-N27HZ	North Reference:	True
Wellbore:	Wilson Ranch 32N-N27HZ	Survey Calculation Method:	Minimum Curvature
Design:	Actual Surveys	Database:	EDM 5000.1 Single User Db

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
16,516.00	7,132.48	-205.83	-9,580.67	Projection to Bit	

Checked By: _____	Approved By: _____	Date: _____
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