

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

3N-68W-22 Hilgers 16-22HZ Pad

HILGERS 15N-27HZ

Plan A

Plan: Permit Rev-1

Standard Planning Report

08 September, 2015

Project: WELD-NAD83-UTMFT13N

Site: 3N-68W-22 Hilgers 16-22HZ Pad

Well: HILGERS 15N-27HZ

Wellbore: Plan A

Design: Permit Rev-1

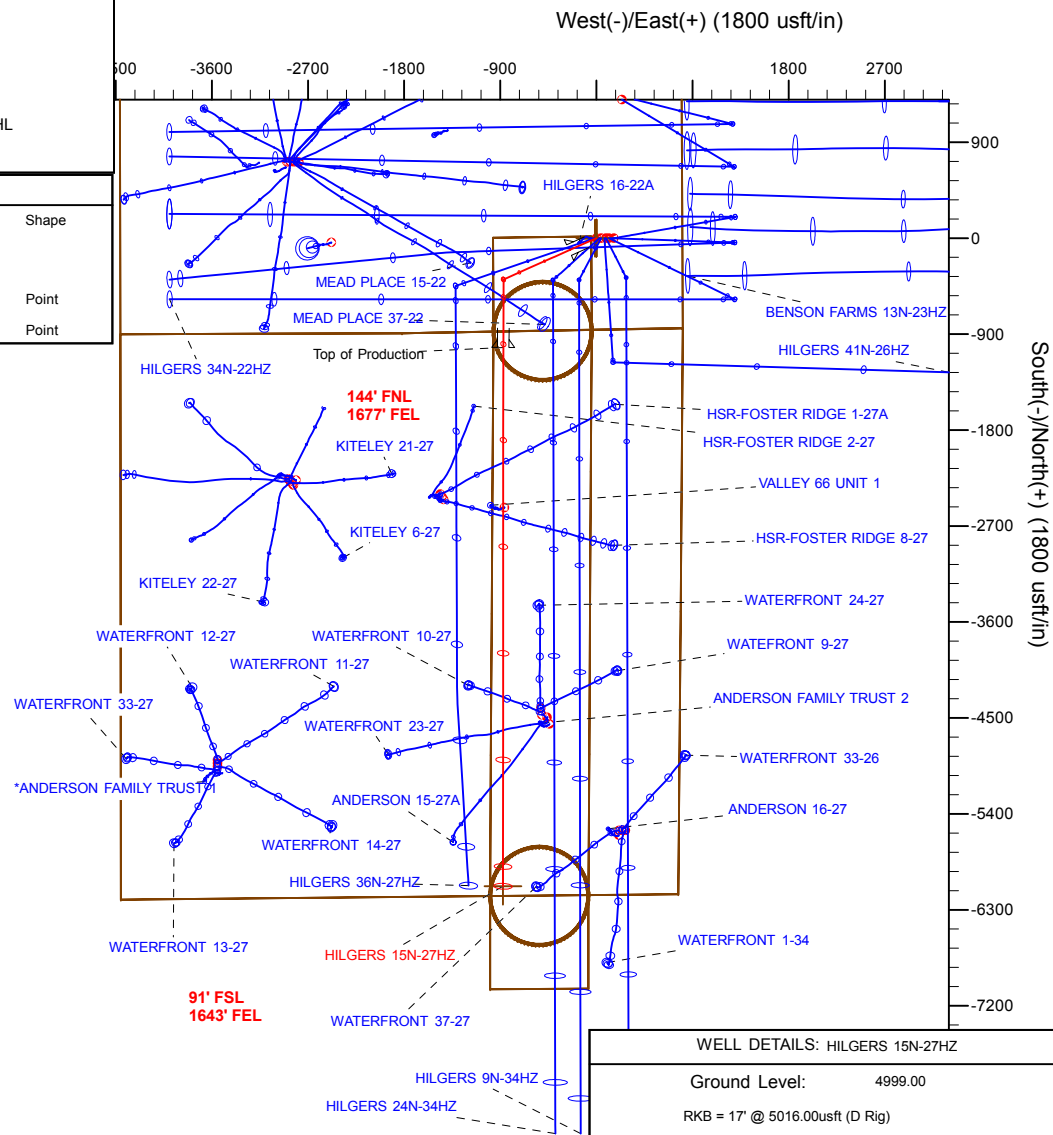
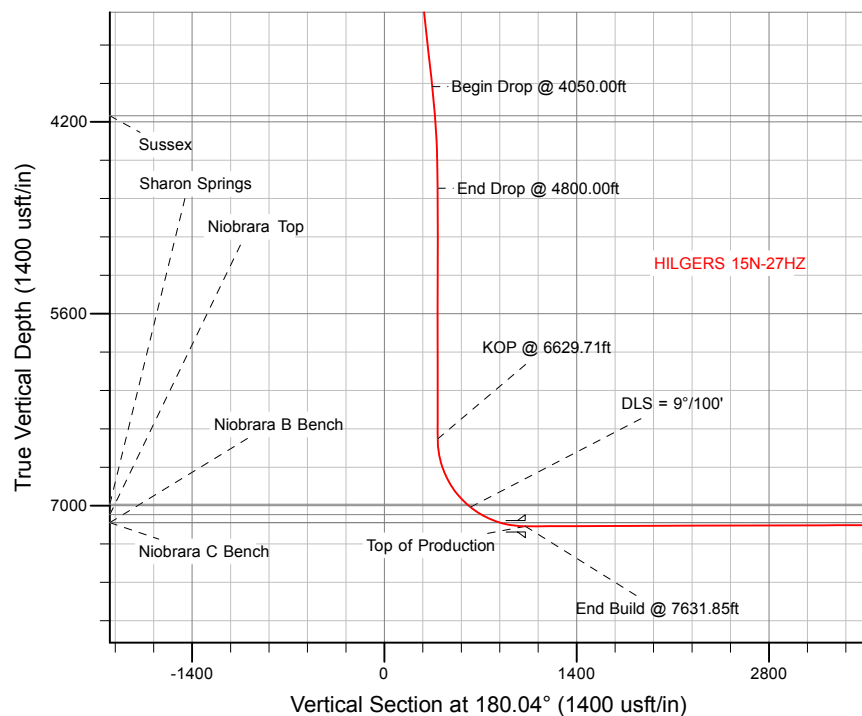
US ROCKIES WATTENBERG PLANNING

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	
3	1250.00	15.00	246.00	1238.62	-52.94	-118.90	1.50	246.00	53.02	
4	4050.00	15.00	246.00	3943.21	-347.70	-780.94	0.00	0.00	348.24	
5	4800.00	0.00	0.00	4684.67	-387.40	-870.12	2.00	180.00	388.01	
6	6629.71	0.00	0.00	6514.38	-387.40	-870.12	0.00	0.00	388.01	
7	7631.85	90.19	180.04	7151.00	-1026.16	-870.60	9.00	180.04	1026.77	
8	12684.87	90.19	180.04	7134.00	-6079.15	-874.41	0.00	0.00	6079.76	HILGERS 15N-27HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
HILGERS 15N-27HZ_SHL	0.00	0.00	0.00	40.206606	-104.982421	Point
HILGERS 15N-27HZ_BHL	7134.00	-6079.15	-874.41	40.189912	-104.985552	Point



Plan: Permit Rev-1 (HILGERS 15N-27HZ/Plan A)

Created By: Clint Eshelman

Date: 7/28/2015

Reviewed: _____

Date: _____

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HILGERS 15N-27HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Site:	3N-68W-22 Hilgers 16-22HZ Pad	North Reference:	True
Well:	HILGERS 15N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

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	3N-68W-22 Hilgers 16-22HZ Pad				
Site Position:		Northing:	14,601,968.89 usft	Latitude:	40.206606
From:	Lat/Long	Easting:	1,645,309.73 usft	Longitude:	-104.982475
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.01 °

Well	HILGERS 15N-27HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,601,968.90 usft	Latitude:	40.206606
	+E/-W	15.08 usft	Easting:	1,645,324.81 usft	Longitude:	-104.982421
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,999.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/6/2015	8.39	66.71	52,561

Design	Permit Rev-1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	180.04

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,250.00	15.00	246.00	1,238.62	-52.94	-118.90	1.50	1.50	0.00	246.00	
4,050.00	15.00	246.00	3,943.21	-347.70	-780.94	0.00	0.00	0.00	0.00	
4,800.00	0.00	0.00	4,684.67	-387.40	-870.12	2.00	-2.00	0.00	180.00	
6,629.71	0.00	0.00	6,514.38	-387.40	-870.12	0.00	0.00	0.00	0.00	
7,631.85	90.19	180.04	7,151.00	-1,026.16	-870.60	9.00	9.00	-17.96	180.04	
12,684.87	90.19	180.04	7,134.00	-6,079.15	-874.41	0.00	0.00	0.00	0.00	HILGERS 15N-27HZ_

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HILGERS 15N-27HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Site:	3N-68W-22 Hilgers 16-22HZ Pad	North Reference:	True
Well:	HILGERS 15N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Planned 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
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 250.00ft									
300.00	0.75	246.00	300.00	-0.13	-0.30	0.13	1.50	1.50	0.00
316.00	0.99	246.00	316.00	-0.23	-0.52	0.23	1.50	1.50	0.00
Fox Hills									
400.00	2.25	246.00	399.96	-1.20	-2.69	1.20	1.50	1.50	0.00
500.00	3.75	246.00	499.82	-3.33	-7.47	3.33	1.50	1.50	0.00
600.00	5.25	246.00	599.51	-6.52	-14.64	6.53	1.50	1.50	0.00
700.00	6.75	246.00	698.96	-10.77	-24.19	10.79	1.50	1.50	0.00
800.00	8.25	246.00	798.10	-16.08	-36.11	16.10	1.50	1.50	0.00
900.00	9.75	246.00	896.87	-22.44	-50.40	22.48	1.50	1.50	0.00
1,000.00	11.25	246.00	995.19	-29.85	-67.05	29.90	1.50	1.50	0.00
1,100.00	12.75	246.00	1,093.00	-38.31	-86.04	38.37	1.50	1.50	0.00
1,200.00	14.25	246.00	1,190.24	-47.80	-107.37	47.88	1.50	1.50	0.00
1,250.00	15.00	246.00	1,238.62	-52.94	-118.90	53.02	1.50	1.50	0.00
End Nudge @ 1250.00ft									
1,300.00	15.00	246.00	1,286.91	-58.20	-130.72	58.29	0.00	0.00	0.00
1,400.00	15.00	246.00	1,383.50	-68.73	-154.37	68.84	0.00	0.00	0.00
1,500.00	15.00	246.00	1,480.10	-79.26	-178.01	79.38	0.00	0.00	0.00
1,600.00	15.00	246.00	1,576.69	-89.78	-201.66	89.92	0.00	0.00	0.00
1,700.00	15.00	246.00	1,673.28	-100.31	-225.30	100.47	0.00	0.00	0.00
1,800.00	15.00	246.00	1,769.88	-110.84	-248.95	111.01	0.00	0.00	0.00
1,831.19	15.00	246.00	1,800.00	-114.12	-256.32	114.30	0.00	0.00	0.00
9 5/8"									
1,900.00	15.00	246.00	1,866.47	-121.36	-272.59	121.55	0.00	0.00	0.00
2,000.00	15.00	246.00	1,963.06	-131.89	-296.23	132.10	0.00	0.00	0.00
2,100.00	15.00	246.00	2,059.65	-142.42	-319.88	142.64	0.00	0.00	0.00
2,200.00	15.00	246.00	2,156.25	-152.95	-343.52	153.19	0.00	0.00	0.00
2,300.00	15.00	246.00	2,252.84	-163.47	-367.17	163.73	0.00	0.00	0.00
2,400.00	15.00	246.00	2,349.43	-174.00	-390.81	174.27	0.00	0.00	0.00
2,500.00	15.00	246.00	2,446.02	-184.53	-414.46	184.82	0.00	0.00	0.00
2,600.00	15.00	246.00	2,542.62	-195.05	-438.10	195.36	0.00	0.00	0.00
2,700.00	15.00	246.00	2,639.21	-205.58	-461.74	205.90	0.00	0.00	0.00
2,800.00	15.00	246.00	2,735.80	-216.11	-485.39	216.45	0.00	0.00	0.00
2,900.00	15.00	246.00	2,832.39	-226.64	-509.03	226.99	0.00	0.00	0.00
3,000.00	15.00	246.00	2,928.99	-237.16	-532.68	237.53	0.00	0.00	0.00
3,100.00	15.00	246.00	3,025.58	-247.69	-556.32	248.08	0.00	0.00	0.00
3,200.00	15.00	246.00	3,122.17	-258.22	-579.97	258.62	0.00	0.00	0.00
3,300.00	15.00	246.00	3,218.76	-268.74	-603.61	269.17	0.00	0.00	0.00
3,400.00	15.00	246.00	3,315.36	-279.27	-627.25	279.71	0.00	0.00	0.00
3,500.00	15.00	246.00	3,411.95	-289.80	-650.90	290.25	0.00	0.00	0.00
3,600.00	15.00	246.00	3,508.54	-300.33	-674.54	300.80	0.00	0.00	0.00
3,700.00	15.00	246.00	3,605.13	-310.85	-698.19	311.34	0.00	0.00	0.00
3,800.00	15.00	246.00	3,701.73	-321.38	-721.83	321.88	0.00	0.00	0.00
3,900.00	15.00	246.00	3,798.32	-331.91	-745.48	332.43	0.00	0.00	0.00
4,000.00	15.00	246.00	3,894.91	-342.43	-769.12	342.97	0.00	0.00	0.00
4,050.00	15.00	246.00	3,943.21	-347.70	-780.94	348.24	0.00	0.00	0.00
Begin Drop @ 4050.00ft									
4,100.00	14.00	246.00	3,991.62	-352.79	-792.38	353.34	2.00	-2.00	0.00
4,200.00	12.00	246.00	4,089.05	-361.94	-812.93	362.51	2.00	-2.00	0.00
4,268.28	10.63	246.00	4,156.00	-367.39	-825.17	367.96	2.00	-2.00	0.00

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Planning Report

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Site:	3N-68W-22 Hilgers 16-22HZ Pad	North Reference:	True
Well:	HILGERS 15N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Planned 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)
Sussex									
4,300.00	10.00	246.00	4,187.20	-369.70	-830.36	370.28	2.00	-2.00	0.00
4,400.00	8.00	246.00	4,285.97	-376.06	-844.65	376.65	2.00	-2.00	0.00
4,500.00	6.00	246.00	4,385.22	-381.02	-855.78	381.62	2.00	-2.00	0.00
4,600.00	4.00	246.00	4,484.83	-384.56	-863.74	385.17	2.00	-2.00	0.00
4,700.00	2.00	246.00	4,584.69	-386.69	-868.52	387.30	2.00	-2.00	0.00
4,800.00	0.00	0.00	4,684.67	-387.40	-870.12	388.01	2.00	-2.00	0.00
End Drop @ 4800.00ft									
4,900.00	0.00	0.00	4,784.67	-387.40	-870.12	388.01	0.00	0.00	0.00
5,000.00	0.00	0.00	4,884.67	-387.40	-870.12	388.01	0.00	0.00	0.00
5,100.00	0.00	0.00	4,984.67	-387.40	-870.12	388.01	0.00	0.00	0.00
5,200.00	0.00	0.00	5,084.67	-387.40	-870.12	388.01	0.00	0.00	0.00
5,300.00	0.00	0.00	5,184.67	-387.40	-870.12	388.01	0.00	0.00	0.00
5,400.00	0.00	0.00	5,284.67	-387.40	-870.12	388.01	0.00	0.00	0.00
5,500.00	0.00	0.00	5,384.67	-387.40	-870.12	388.01	0.00	0.00	0.00
5,600.00	0.00	0.00	5,484.67	-387.40	-870.12	388.01	0.00	0.00	0.00
5,700.00	0.00	0.00	5,584.67	-387.40	-870.12	388.01	0.00	0.00	0.00
5,800.00	0.00	0.00	5,684.67	-387.40	-870.12	388.01	0.00	0.00	0.00
5,900.00	0.00	0.00	5,784.67	-387.40	-870.12	388.01	0.00	0.00	0.00
6,000.00	0.00	0.00	5,884.67	-387.40	-870.12	388.01	0.00	0.00	0.00
6,100.00	0.00	0.00	5,984.67	-387.40	-870.12	388.01	0.00	0.00	0.00
6,200.00	0.00	0.00	6,084.67	-387.40	-870.12	388.01	0.00	0.00	0.00
6,300.00	0.00	0.00	6,184.67	-387.40	-870.12	388.01	0.00	0.00	0.00
6,400.00	0.00	0.00	6,284.67	-387.40	-870.12	388.01	0.00	0.00	0.00
6,500.00	0.00	0.00	6,384.67	-387.40	-870.12	388.01	0.00	0.00	0.00
6,600.00	0.00	0.00	6,484.67	-387.40	-870.12	388.01	0.00	0.00	0.00
6,629.71	0.00	0.00	6,514.38	-387.40	-870.12	388.01	0.00	0.00	0.00
KOP @ 6629.71ft									
6,700.00	6.33	180.04	6,584.53	-391.28	-870.12	391.89	9.00	9.00	0.00
6,800.00	15.33	180.04	6,682.65	-410.04	-870.13	410.65	9.00	9.00	0.00
6,900.00	24.33	180.04	6,776.62	-443.92	-870.16	444.53	9.00	9.00	0.00
7,000.00	33.33	180.04	6,864.14	-492.09	-870.20	492.70	9.00	9.00	0.00
7,100.00	42.33	180.04	6,943.05	-553.35	-870.24	553.96	9.00	9.00	0.00
7,168.03	48.45	180.04	6,990.80	-601.75	-870.28	602.36	9.00	9.00	0.00
Sharon Springs									
7,200.00	51.33	180.04	7,011.40	-626.21	-870.30	626.81	9.00	9.00	0.00
DLS = 9°/100'									
7,296.56	60.02	180.04	7,065.80	-705.87	-870.36	706.48	9.00	9.00	0.00
Niobrara Top									
7,300.00	60.33	180.04	7,067.51	-708.85	-870.36	709.46	9.00	9.00	0.00
7,400.00	69.33	180.04	7,110.00	-799.26	-870.43	799.87	9.00	9.00	0.00
7,448.20	73.66	180.04	7,125.30	-844.96	-870.46	845.57	9.00	9.00	0.00
Niobrara B Bench - Niobrara C Bench									
7,500.00	78.33	180.04	7,137.83	-895.21	-870.50	895.81	9.00	9.00	0.00
7,600.00	87.33	180.04	7,150.31	-994.32	-870.57	994.93	9.00	9.00	0.00
7,631.85	90.19	180.04	7,151.00	-1,026.16	-870.60	1,026.77	9.00	9.00	0.00
End Build @ 7631.85ft - Top of Production									
7,700.00	90.19	180.04	7,150.77	-1,094.31	-870.65	1,094.92	0.00	0.00	0.00
7,800.00	90.19	180.04	7,150.43	-1,194.31	-870.73	1,194.92	0.00	0.00	0.00
7,900.00	90.19	180.04	7,150.09	-1,294.31	-870.80	1,294.92	0.00	0.00	0.00
8,000.00	90.19	180.04	7,149.76	-1,394.31	-870.88	1,394.92	0.00	0.00	0.00
8,100.00	90.19	180.04	7,149.42	-1,494.31	-870.95	1,494.92	0.00	0.00	0.00
8,200.00	90.19	180.04	7,149.09	-1,594.31	-871.03	1,594.92	0.00	0.00	0.00

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HILGERS 15N-27HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Site:	3N-68W-22 Hilgers 16-22HZ Pad	North Reference:	True
Well:	HILGERS 15N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Planned 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)	
8,300.00	90.19	180.04	7,148.75	-1,694.31	-871.10	1,694.91	0.00	0.00	0.00	
8,400.00	90.19	180.04	7,148.41	-1,794.31	-871.18	1,794.91	0.00	0.00	0.00	
8,500.00	90.19	180.04	7,148.08	-1,894.31	-871.25	1,894.91	0.00	0.00	0.00	
8,600.00	90.19	180.04	7,147.74	-1,994.31	-871.33	1,994.91	0.00	0.00	0.00	
8,700.00	90.19	180.04	7,147.40	-2,094.30	-871.40	2,094.91	0.00	0.00	0.00	
8,800.00	90.19	180.04	7,147.07	-2,194.30	-871.48	2,194.91	0.00	0.00	0.00	
8,900.00	90.19	180.04	7,146.73	-2,294.30	-871.55	2,294.91	0.00	0.00	0.00	
9,000.00	90.19	180.04	7,146.39	-2,394.30	-871.63	2,394.91	0.00	0.00	0.00	
9,100.00	90.19	180.04	7,146.06	-2,494.30	-871.71	2,494.91	0.00	0.00	0.00	
9,200.00	90.19	180.04	7,145.72	-2,594.30	-871.78	2,594.91	0.00	0.00	0.00	
9,300.00	90.19	180.04	7,145.39	-2,694.30	-871.86	2,694.91	0.00	0.00	0.00	
9,400.00	90.19	180.04	7,145.05	-2,794.30	-871.93	2,794.91	0.00	0.00	0.00	
9,500.00	90.19	180.04	7,144.71	-2,894.30	-872.01	2,894.91	0.00	0.00	0.00	
9,600.00	90.19	180.04	7,144.38	-2,994.30	-872.08	2,994.91	0.00	0.00	0.00	
9,700.00	90.19	180.04	7,144.04	-3,094.30	-872.16	3,094.91	0.00	0.00	0.00	
9,800.00	90.19	180.04	7,143.70	-3,194.30	-872.23	3,194.91	0.00	0.00	0.00	
9,900.00	90.19	180.04	7,143.37	-3,294.30	-872.31	3,294.91	0.00	0.00	0.00	
10,000.00	90.19	180.04	7,143.03	-3,394.30	-872.38	3,394.91	0.00	0.00	0.00	
10,100.00	90.19	180.04	7,142.69	-3,494.30	-872.46	3,494.90	0.00	0.00	0.00	
10,200.00	90.19	180.04	7,142.36	-3,594.30	-872.53	3,594.90	0.00	0.00	0.00	
10,300.00	90.19	180.04	7,142.02	-3,694.30	-872.61	3,694.90	0.00	0.00	0.00	
10,400.00	90.19	180.04	7,141.69	-3,794.29	-872.68	3,794.90	0.00	0.00	0.00	
10,500.00	90.19	180.04	7,141.35	-3,894.29	-872.76	3,894.90	0.00	0.00	0.00	
10,600.00	90.19	180.04	7,141.01	-3,994.29	-872.84	3,994.90	0.00	0.00	0.00	
10,700.00	90.19	180.04	7,140.68	-4,094.29	-872.91	4,094.90	0.00	0.00	0.00	
10,800.00	90.19	180.04	7,140.34	-4,194.29	-872.99	4,194.90	0.00	0.00	0.00	
10,900.00	90.19	180.04	7,140.00	-4,294.29	-873.06	4,294.90	0.00	0.00	0.00	
11,000.00	90.19	180.04	7,139.67	-4,394.29	-873.14	4,394.90	0.00	0.00	0.00	
11,100.00	90.19	180.04	7,139.33	-4,494.29	-873.21	4,494.90	0.00	0.00	0.00	
11,200.00	90.19	180.04	7,138.99	-4,594.29	-873.29	4,594.90	0.00	0.00	0.00	
11,300.00	90.19	180.04	7,138.66	-4,694.29	-873.36	4,694.90	0.00	0.00	0.00	
11,400.00	90.19	180.04	7,138.32	-4,794.29	-873.44	4,794.90	0.00	0.00	0.00	
11,500.00	90.19	180.04	7,137.99	-4,894.29	-873.51	4,894.90	0.00	0.00	0.00	
11,600.00	90.19	180.04	7,137.65	-4,994.29	-873.59	4,994.90	0.00	0.00	0.00	
11,700.00	90.19	180.04	7,137.31	-5,094.29	-873.66	5,094.90	0.00	0.00	0.00	
11,800.00	90.19	180.04	7,136.98	-5,194.29	-873.74	5,194.90	0.00	0.00	0.00	
11,900.00	90.19	180.04	7,136.64	-5,294.29	-873.81	5,294.89	0.00	0.00	0.00	
12,000.00	90.19	180.04	7,136.30	-5,394.29	-873.89	5,394.89	0.00	0.00	0.00	
12,100.00	90.19	180.04	7,135.97	-5,494.28	-873.97	5,494.89	0.00	0.00	0.00	
12,200.00	90.19	180.04	7,135.63	-5,594.28	-874.04	5,594.89	0.00	0.00	0.00	
12,300.00	90.19	180.04	7,135.29	-5,694.28	-874.12	5,694.89	0.00	0.00	0.00	
12,400.00	90.19	180.04	7,134.96	-5,794.28	-874.19	5,794.89	0.00	0.00	0.00	
12,500.00	90.19	180.04	7,134.62	-5,894.28	-874.27	5,894.89	0.00	0.00	0.00	
12,600.00	90.19	180.04	7,134.29	-5,994.28	-874.34	5,994.89	0.00	0.00	0.00	
12,684.87	90.19	180.04	7,134.00	-6,079.15	-874.41	6,079.76	0.00	0.00	0.00	
TD Well @ 12684.87ft										

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HILGERS 15N-27HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Site:	3N-68W-22 Hilgers 16-22HZ Pad	North Reference:	True
Well:	HILGERS 15N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
HILGERS 15N-27HZ_St	0.00	0.00	0.00	0.00	0.00	14,601,968.90	1,645,324.81	40.206606	-104.982421
- plan hits target center									
- Point									
3N-R68W-Sec. 27_Secti	0.00	0.00	0.00	0.00	-15.08	14,601,968.89	1,645,309.73	40.206606	-104.982475
- plan misses target center by 15.08usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			0.00	-901.61	-4,440.91	14,601,066.40	1,640,869.00		
Point 2			0.00	-893.57	-1,805.40	14,601,074.97	1,643,504.51		
Point 3			0.00	-845.64	823.41	14,601,123.42	1,646,133.31		
Point 4			0.00	-3,498.41	802.83	14,598,470.64	1,646,113.26		
Point 5			0.00	-6,154.53	782.53	14,595,814.52	1,646,093.48		
Point 6			0.00	-6,204.04	-4,436.84	14,595,763.97	1,640,874.12		
HILGERS 15N-27HZ_Hz	0.00	0.00	0.00	0.00	0.00	14,601,968.90	1,645,324.81	40.206606	-104.982421
- plan hits target center									
- Polygon									
Point 1			0.00	4.01	-967.82	14,601,972.71	1,644,356.99		
Point 2			0.00	15.74	-47.87	14,601,984.63	1,645,276.94		
Point 3			0.00	-861.50	-43.18	14,601,107.39	1,645,281.80		
Point 4			0.00	-2,185.46	-51.46	14,599,783.43	1,645,273.78		
Point 5			0.00	-3,509.42	-59.83	14,598,459.46	1,645,265.67		
Point 6			0.00	-4,837.19	-67.21	14,597,131.69	1,645,258.56		
Point 7			0.00	-6,171.88	-74.64	14,595,797.00	1,645,251.39		
Point 8			0.00	-7,040.70	-75.47	14,594,928.18	1,645,250.73		
Point 9			0.00	-7,045.79	-995.47	14,594,922.91	1,644,330.74		
Point 10			0.00	-6,173.69	-994.63	14,595,795.01	1,644,331.40		
Point 11			0.00	-4,846.25	-987.28	14,597,122.45	1,644,338.49		
Point 12			0.00	-3,518.82	-979.90	14,598,449.88	1,644,345.61		
Point 13			0.00	-2,199.07	-971.56	14,599,769.63	1,644,353.69		
Point 14			0.00	-879.32	-963.21	14,601,089.39	1,644,361.77		
Point 15			0.00	4.01	-967.82	14,601,972.71	1,644,356.99		
3N-R68W-Sec. 34_Secti	0.00	0.00	0.00	0.00	-15.08	14,601,968.89	1,645,309.73	40.206606	-104.982475
- plan misses target center by 15.08usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			0.00	-6,204.04	-4,436.84	14,595,763.97	1,640,874.12		
Point 2			0.00	-6,154.53	782.53	14,595,814.52	1,646,093.48		
Point 3			0.00	-11,510.48	839.68	14,590,458.58	1,646,151.69		
Point 4			0.00	-11,511.55	-4,434.16	14,590,456.47	1,640,877.85		
HILGERS 15N-27HZ_46	0.00	0.00	0.00	0.00	0.00	14,601,968.90	1,645,324.81	40.206606	-104.982421
- plan hits target center									
- Polygon									
Point 1			0.00	-400.41	-502.68	14,601,568.39	1,644,822.21		
Point 2			0.00	-401.71	-468.30	14,601,567.09	1,644,856.59		
Point 3			0.00	-405.62	-433.37	14,601,563.19	1,644,891.52		
Point 4			0.00	-412.13	-398.83	14,601,556.69	1,644,926.06		
Point 5			0.00	-421.21	-364.88	14,601,547.61	1,644,960.01		
Point 6			0.00	-432.80	-331.70	14,601,536.03	1,644,993.20		
Point 7			0.00	-446.83	-299.47	14,601,522.01	1,645,025.43		
Point 8			0.00	-463.24	-268.39	14,601,505.60	1,645,056.51		
Point 9			0.00	-481.92	-238.62	14,601,486.93	1,645,086.29		
Point 10			0.00	-502.78	-210.33	14,601,466.07	1,645,114.58		
Point 11			0.00	-525.68	-183.68	14,601,443.18	1,645,141.23		
Point 12			0.00	-550.53	-158.81	14,601,418.33	1,645,166.11		
Point 13			0.00	-577.15	-135.87	14,601,391.72	1,645,189.05		
Point 14			0.00	-605.42	-114.97	14,601,363.45	1,645,209.96		
Point 15			0.00	-635.17	-96.26	14,601,333.71	1,645,228.68		
Point 16			0.00	-666.23	-79.81	14,601,302.65	1,645,245.13		

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HILGERS 15N-27HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Site:	3N-68W-22 Hilgers 16-22HZ Pad	North Reference:	True
Well:	HILGERS 15N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Point 17	0.00	-698.44	-65.74	14,601,270.44	1,645,259.21
Point 18	0.00	-731.61	-54.12	14,601,237.28	1,645,270.83
Point 19	0.00	-765.55	-44.99	14,601,203.34	1,645,279.97
Point 20	0.00	-800.08	-38.44	14,601,168.81	1,645,286.53
Point 21	0.00	-835.00	-34.49	14,601,133.89	1,645,290.49
Point 22	0.00	-870.12	-33.16	14,601,098.77	1,645,291.82
Point 23	0.00	-905.25	-34.44	14,601,063.64	1,645,290.55
Point 24	0.00	-940.18	-38.36	14,601,028.71	1,645,286.64
Point 25	0.00	-974.71	-44.88	14,600,994.18	1,645,280.12
Point 26	0.00	-1,008.67	-53.95	14,600,960.22	1,645,271.06
Point 27	0.00	-1,041.86	-65.54	14,600,927.02	1,645,259.48
Point 28	0.00	-1,074.07	-79.58	14,600,894.81	1,645,245.44
Point 29	0.00	-1,105.16	-95.98	14,600,863.72	1,645,229.05
Point 30	0.00	-1,134.93	-114.66	14,600,833.94	1,645,210.37
Point 31	0.00	-1,163.22	-135.51	14,600,805.65	1,645,189.53
Point 32	0.00	-1,189.88	-158.43	14,600,778.98	1,645,166.62
Point 33	0.00	-1,214.74	-183.26	14,600,754.12	1,645,141.79
Point 34	0.00	-1,237.69	-209.89	14,600,731.16	1,645,115.16
Point 35	0.00	-1,258.57	-238.15	14,600,710.28	1,645,086.91
Point 36	0.00	-1,277.29	-267.91	14,600,691.55	1,645,057.15
Point 37	0.00	-1,293.73	-298.97	14,600,675.11	1,645,026.10
Point 38	0.00	-1,307.80	-331.17	14,600,661.03	1,644,993.90
Point 39	0.00	-1,319.44	-364.34	14,600,649.38	1,644,960.73
Point 40	0.00	-1,328.55	-398.29	14,600,640.27	1,644,926.78
Point 41	0.00	-1,335.10	-432.82	14,600,633.71	1,644,892.25
Point 42	0.00	-1,339.07	-467.74	14,600,629.73	1,644,857.33
Point 43	0.00	-1,340.41	-503.24	14,600,628.39	1,644,821.84
Point 44	0.00	-1,339.10	-537.99	14,600,629.69	1,644,787.08
Point 45	0.00	-1,335.20	-572.92	14,600,633.58	1,644,752.15
Point 46	0.00	-1,328.68	-607.46	14,600,640.10	1,644,717.61
Point 47	0.00	-1,319.60	-641.41	14,600,649.17	1,644,683.66
Point 48	0.00	-1,308.02	-674.59	14,600,660.74	1,644,650.48
Point 49	0.00	-1,293.98	-706.82	14,600,674.78	1,644,618.25
Point 50	0.00	-1,277.57	-737.90	14,600,691.18	1,644,587.16
Point 51	0.00	-1,258.89	-767.67	14,600,709.85	1,644,557.39
Point 52	0.00	-1,238.03	-795.96	14,600,730.71	1,644,529.09
Point 53	0.00	-1,215.13	-822.61	14,600,753.60	1,644,502.44
Point 54	0.00	-1,190.29	-847.49	14,600,778.44	1,644,477.56
Point 55	0.00	-1,163.66	-870.42	14,600,805.06	1,644,454.62
Point 56	0.00	-1,135.39	-891.32	14,600,833.33	1,644,433.71
Point 57	0.00	-1,105.65	-910.03	14,600,863.07	1,644,415.00
Point 58	0.00	-1,074.59	-926.48	14,600,894.12	1,644,398.54
Point 59	0.00	-1,042.37	-940.55	14,600,926.34	1,644,384.47
Point 60	0.00	-1,009.21	-952.17	14,600,959.50	1,644,372.84
Point 61	0.00	-975.26	-961.30	14,600,993.45	1,644,363.70
Point 62	0.00	-940.73	-967.85	14,601,027.97	1,644,357.15
Point 63	0.00	-905.81	-971.80	14,601,062.89	1,644,353.19
Point 64	0.00	-870.69	-973.14	14,601,098.01	1,644,351.84
Point 65	0.00	-835.57	-971.85	14,601,133.13	1,644,353.13
Point 66	0.00	-800.64	-967.93	14,601,168.06	1,644,357.04
Point 67	0.00	-766.10	-961.41	14,601,202.61	1,644,363.55
Point 68	0.00	-732.14	-952.34	14,601,236.57	1,644,372.61
Point 69	0.00	-698.96	-940.75	14,601,269.75	1,644,384.20
Point 70	0.00	-666.74	-926.72	14,601,301.97	1,644,398.22
Point 71	0.00	-635.65	-910.31	14,601,333.07	1,644,414.63
Point 72	0.00	-605.88	-891.63	14,601,362.84	1,644,433.30
Point 73	0.00	-577.59	-870.78	14,601,391.13	1,644,454.14
Point 74	0.00	-550.93	-847.86	14,601,417.80	1,644,477.06
Point 75	0.00	-526.07	-823.03	14,601,442.66	1,644,501.88
Point 76	0.00	-503.12	-796.40	14,601,465.62	1,644,528.51
Point 77	0.00	-482.24	-768.14	14,601,486.50	1,644,556.77
Point 78	0.00	-463.52	-738.38	14,601,505.23	1,644,586.52
Point 79	0.00	-447.08	-707.32	14,601,521.68	1,644,617.58
Point 80	0.00	-433.01	-675.12	14,601,535.75	1,644,649.78

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HILGERS 15N-27HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Site:	3N-68W-22 Hilgers 16-22HZ Pad	North Reference:	True
Well:	HILGERS 15N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Point 81	0.00	-421.37	-641.95	14,601,547.40	1,644,682.94
Point 82	0.00	-412.26	-608.00	14,601,556.52	1,644,716.89
Point 83	0.00	-405.71	-573.47	14,601,563.07	1,644,751.42
Point 84	0.00	-401.74	-538.55	14,601,567.05	1,644,786.34
Point 85	0.00	-400.41	-503.42	14,601,568.39	1,644,821.47
Point 86	0.00	-420.40	-502.69	14,601,548.40	1,644,822.20
Point 87	0.00	-421.62	-536.32	14,601,547.17	1,644,788.57
Point 88	0.00	-425.36	-569.76	14,601,543.42	1,644,755.13
Point 89	0.00	-431.58	-602.83	14,601,537.20	1,644,722.07
Point 90	0.00	-440.25	-635.34	14,601,528.52	1,644,689.56
Point 91	0.00	-451.34	-667.12	14,601,517.42	1,644,657.78
Point 92	0.00	-464.76	-697.98	14,601,504.00	1,644,626.92
Point 93	0.00	-480.46	-727.75	14,601,488.29	1,644,597.15
Point 94	0.00	-498.33	-756.26	14,601,470.42	1,644,568.65
Point 95	0.00	-518.28	-783.36	14,601,450.46	1,644,541.55
Point 96	0.00	-540.21	-808.89	14,601,428.53	1,644,516.03
Point 97	0.00	-563.99	-832.70	14,601,404.74	1,644,492.22
Point 98	0.00	-589.47	-854.69	14,601,379.26	1,644,470.24
Point 99	0.00	-616.53	-874.70	14,601,352.19	1,644,450.23
Point 100	0.00	-645.00	-892.63	14,601,323.72	1,644,432.31
Point 101	0.00	-674.74	-908.39	14,601,293.98	1,644,416.55
Point 102	0.00	-705.57	-921.87	14,601,263.14	1,644,403.08
Point 103	0.00	-737.33	-933.02	14,601,231.38	1,644,391.94
Point 104	0.00	-769.82	-941.77	14,601,198.89	1,644,383.19
Point 105	0.00	-802.88	-948.06	14,601,165.83	1,644,376.91
Point 106	0.00	-836.31	-951.86	14,601,132.40	1,644,373.12
Point 107	0.00	-869.94	-953.16	14,601,098.77	1,644,371.82
Point 108	0.00	-903.57	-951.93	14,601,065.14	1,644,373.06
Point 109	0.00	-937.02	-948.20	14,601,031.69	1,644,376.80
Point 110	0.00	-970.09	-941.98	14,600,998.62	1,644,383.02
Point 111	0.00	-1,002.61	-933.30	14,600,966.10	1,644,391.71
Point 112	0.00	-1,034.38	-922.22	14,600,934.33	1,644,402.79
Point 113	0.00	-1,065.24	-908.78	14,600,903.48	1,644,416.24
Point 114	0.00	-1,095.01	-893.09	14,600,873.71	1,644,431.94
Point 115	0.00	-1,123.52	-875.22	14,600,845.20	1,644,449.81
Point 116	0.00	-1,150.62	-855.26	14,600,818.11	1,644,469.78
Point 117	0.00	-1,176.14	-833.34	14,600,792.59	1,644,491.70
Point 118	0.00	-1,199.97	-809.57	14,600,768.77	1,644,515.48
Point 119	0.00	-1,221.94	-784.08	14,600,746.80	1,644,540.97
Point 120	0.00	-1,241.96	-757.03	14,600,726.79	1,644,568.03
Point 121	0.00	-1,259.90	-728.55	14,600,708.85	1,644,596.51
Point 122	0.00	-1,275.65	-698.82	14,600,693.11	1,644,626.24
Point 123	0.00	-1,289.14	-667.98	14,600,679.62	1,644,657.09
Point 124	0.00	-1,300.28	-636.23	14,600,668.49	1,644,688.84
Point 125	0.00	-1,309.03	-603.73	14,600,659.75	1,644,721.34
Point 126	0.00	-1,315.32	-570.67	14,600,653.46	1,644,754.40
Point 127	0.00	-1,319.12	-537.23	14,600,649.67	1,644,787.84
Point 128	0.00	-1,320.40	-503.23	14,600,648.40	1,644,821.84
Point 129	0.00	-1,319.19	-469.97	14,600,649.61	1,644,855.10
Point 130	0.00	-1,315.45	-436.53	14,600,653.36	1,644,888.54
Point 131	0.00	-1,309.23	-403.46	14,600,659.59	1,644,921.61
Point 132	0.00	-1,300.56	-370.95	14,600,668.26	1,644,954.12
Point 133	0.00	-1,289.47	-339.17	14,600,679.36	1,644,985.90
Point 134	0.00	-1,276.05	-308.32	14,600,692.79	1,645,016.74
Point 135	0.00	-1,260.35	-278.54	14,600,708.49	1,645,046.52
Point 136	0.00	-1,242.48	-250.03	14,600,726.37	1,645,075.03
Point 137	0.00	-1,222.53	-222.94	14,600,746.32	1,645,102.11
Point 138	0.00	-1,200.60	-197.40	14,600,768.26	1,645,127.65
Point 139	0.00	-1,176.83	-173.59	14,600,792.03	1,645,151.45
Point 140	0.00	-1,151.34	-151.60	14,600,817.53	1,645,173.44
Point 141	0.00	-1,124.28	-131.60	14,600,844.59	1,645,193.43
Point 142	0.00	-1,095.81	-113.66	14,600,873.06	1,645,211.37
Point 143	0.00	-1,066.07	-97.90	14,600,902.81	1,645,227.12
Point 144	0.00	-1,035.24	-84.42	14,600,933.64	1,645,240.59

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HILGERS 15N-27HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Site:	3N-68W-22 Hilgers 16-22HZ Pad	North Reference:	True
Well:	HILGERS 15N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Point 145	0.00	-1,003.50	-73.27	14,600,965.38	1,645,251.74			
Point 146	0.00	-971.00	-64.53	14,600,997.88	1,645,260.47			
Point 147	0.00	-937.94	-58.24	14,601,030.94	1,645,266.76			
Point 148	0.00	-904.50	-54.43	14,601,064.39	1,645,270.56			
Point 149	0.00	-870.87	-53.14	14,601,098.02	1,645,271.84			
Point 150	0.00	-837.24	-54.36	14,601,131.65	1,645,270.62			
Point 151	0.00	-803.80	-58.09	14,601,165.08	1,645,266.88			
Point 152	0.00	-770.72	-64.32	14,601,198.16	1,645,260.64			
Point 153	0.00	-738.21	-73.00	14,601,230.67	1,645,251.96			
Point 154	0.00	-706.43	-84.07	14,601,262.45	1,645,240.88			
Point 155	0.00	-675.57	-97.51	14,601,293.31	1,645,227.43			
Point 156	0.00	-645.81	-113.20	14,601,323.06	1,645,211.74			
Point 157	0.00	-617.29	-131.08	14,601,351.58	1,645,193.85			
Point 158	0.00	-590.19	-151.03	14,601,378.68	1,645,173.90			
Point 159	0.00	-564.67	-172.95	14,601,404.19	1,645,151.97			
Point 160	0.00	-540.84	-196.72	14,601,428.02	1,645,128.20			
Point 161	0.00	-518.87	-222.21	14,601,449.98	1,645,102.70			
Point 162	0.00	-498.85	-249.26	14,601,470.00	1,645,075.65			
Point 163	0.00	-480.92	-277.74	14,601,487.92	1,645,047.16			
Point 164	0.00	-465.17	-307.48	14,601,503.67	1,645,017.42			
Point 165	0.00	-451.67	-338.31	14,601,517.16	1,644,986.59			
Point 166	0.00	-440.53	-370.06	14,601,528.29	1,644,954.84			
Point 167	0.00	-431.78	-402.56	14,601,537.04	1,644,922.34			
Point 168	0.00	-425.49	-435.62	14,601,543.32	1,644,889.27			
Point 169	0.00	-421.70	-469.06	14,601,547.10	1,644,855.83			
Point 170	0.00	-420.40	-503.43	14,601,548.40	1,644,821.46			
Point 171	0.00	-400.41	-502.68	14,601,568.39	1,644,822.21			
HILGERS 15N-27HZ_46	0.00	0.00	0.00	0.00	14,601,968.90	1,645,324.81	40.206606	-104.982421
- plan hits target center								
- Polygon								
Point 1	0.00	-5,699.33	-534.16	14,596,269.46	1,644,791.78			
Point 2	0.00	-5,700.62	-499.78	14,596,268.18	1,644,826.16			
Point 3	0.00	-5,704.54	-464.85	14,596,264.26	1,644,861.09			
Point 4	0.00	-5,711.05	-430.31	14,596,257.76	1,644,895.63			
Point 5	0.00	-5,720.13	-396.37	14,596,248.69	1,644,929.57			
Point 6	0.00	-5,731.72	-363.18	14,596,237.10	1,644,962.77			
Point 7	0.00	-5,745.75	-330.96	14,596,223.08	1,644,994.99			
Point 8	0.00	-5,762.16	-299.87	14,596,206.68	1,645,026.08			
Point 9	0.00	-5,780.84	-270.10	14,596,188.00	1,645,055.85			
Point 10	0.00	-5,801.69	-241.81	14,596,167.16	1,645,084.15			
Point 11	0.00	-5,824.61	-215.16	14,596,144.24	1,645,110.80			
Point 12	0.00	-5,849.44	-190.29	14,596,119.42	1,645,135.68			
Point 13	0.00	-5,876.07	-167.35	14,596,092.79	1,645,158.62			
Point 14	0.00	-5,904.33	-146.46	14,596,064.54	1,645,179.52			
Point 15	0.00	-5,934.08	-127.74	14,596,034.79	1,645,198.25			
Point 16	0.00	-5,965.15	-111.29	14,596,003.72	1,645,214.70			
Point 17	0.00	-5,997.35	-97.22	14,595,971.53	1,645,228.78			
Point 18	0.00	-6,030.52	-85.60	14,595,938.36	1,645,240.40			
Point 19	0.00	-6,064.46	-76.48	14,595,904.42	1,645,249.53			
Point 20	0.00	-6,099.00	-69.92	14,595,869.88	1,645,256.10			
Point 21	0.00	-6,133.92	-65.97	14,595,834.96	1,645,260.05			
Point 22	0.00	-6,169.04	-64.63	14,595,799.84	1,645,261.40			
Point 23	0.00	-6,204.17	-65.92	14,595,764.71	1,645,260.12			
Point 24	0.00	-6,239.10	-69.84	14,595,729.78	1,645,256.21			
Point 25	0.00	-6,273.63	-76.36	14,595,695.25	1,645,249.69			
Point 26	0.00	-6,307.58	-85.43	14,595,661.30	1,645,240.63			
Point 27	0.00	-6,340.77	-97.02	14,595,628.11	1,645,229.05			
Point 28	0.00	-6,372.99	-111.06	14,595,595.88	1,645,215.01			
Point 29	0.00	-6,404.07	-127.46	14,595,564.80	1,645,198.62			
Point 30	0.00	-6,433.85	-146.14	14,595,535.02	1,645,179.94			
Point 31	0.00	-6,462.14	-166.99	14,595,506.72	1,645,159.10			
Point 32	0.00	-6,488.79	-189.91	14,595,480.07	1,645,136.18			
Point 33	0.00	-6,513.66	-214.74	14,595,455.19	1,645,111.36			

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HILGERS 15N-27HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Site:	3N-68W-22 Hilgers 16-22HZ Pad	North Reference:	True
Well:	HILGERS 15N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Point 34	0.00	-6,536.60	-241.37	14,595,432.25	1,645,084.73
Point 35	0.00	-6,557.49	-269.64	14,595,411.35	1,645,056.47
Point 36	0.00	-6,576.21	-299.39	14,595,392.63	1,645,026.72
Point 37	0.00	-6,592.65	-330.45	14,595,376.18	1,644,995.67
Point 38	0.00	-6,606.73	-362.66	14,595,362.09	1,644,963.46
Point 39	0.00	-6,618.35	-395.82	14,595,350.47	1,644,930.30
Point 40	0.00	-6,627.46	-429.77	14,595,341.35	1,644,896.35
Point 41	0.00	-6,634.03	-464.30	14,595,334.77	1,644,861.82
Point 42	0.00	-6,637.98	-499.23	14,595,330.82	1,644,826.89
Point 43	0.00	-6,639.33	-534.72	14,595,329.46	1,644,791.40
Point 44	0.00	-6,638.03	-569.47	14,595,330.75	1,644,756.65
Point 45	0.00	-6,634.11	-604.40	14,595,334.67	1,644,721.72
Point 46	0.00	-6,627.59	-638.94	14,595,341.18	1,644,687.18
Point 47	0.00	-6,618.52	-672.89	14,595,350.24	1,644,653.23
Point 48	0.00	-6,606.93	-706.07	14,595,361.83	1,644,620.05
Point 49	0.00	-6,592.89	-738.30	14,595,375.86	1,644,587.82
Point 50	0.00	-6,576.49	-769.38	14,595,392.25	1,644,556.73
Point 51	0.00	-6,557.81	-799.15	14,595,410.93	1,644,526.96
Point 52	0.00	-6,536.96	-827.44	14,595,431.77	1,644,498.66
Point 53	0.00	-6,514.04	-854.09	14,595,454.69	1,644,472.01
Point 54	0.00	-6,489.21	-878.97	14,595,479.51	1,644,447.13
Point 55	0.00	-6,462.58	-901.90	14,595,506.14	1,644,424.19
Point 56	0.00	-6,434.31	-922.80	14,595,534.40	1,644,403.28
Point 57	0.00	-6,404.56	-941.51	14,595,564.15	1,644,384.57
Point 58	0.00	-6,373.50	-957.96	14,595,595.21	1,644,368.11
Point 59	0.00	-6,341.29	-972.03	14,595,627.41	1,644,354.04
Point 60	0.00	-6,308.13	-983.65	14,595,660.57	1,644,342.41
Point 61	0.00	-6,274.18	-992.78	14,595,694.52	1,644,333.27
Point 62	0.00	-6,239.65	-999.33	14,595,729.05	1,644,326.72
Point 63	0.00	-6,204.72	-1,003.28	14,595,763.98	1,644,322.76
Point 64	0.00	-6,169.60	-1,004.61	14,595,799.10	1,644,321.42
Point 65	0.00	-6,134.48	-1,003.33	14,595,834.22	1,644,322.69
Point 66	0.00	-6,099.55	-999.41	14,595,869.15	1,644,326.61
Point 67	0.00	-6,065.01	-992.89	14,595,903.69	1,644,333.12
Point 68	0.00	-6,031.06	-983.82	14,595,937.64	1,644,342.18
Point 69	0.00	-5,997.88	-972.23	14,595,970.82	1,644,353.77
Point 70	0.00	-5,965.65	-958.19	14,596,003.06	1,644,367.80
Point 71	0.00	-5,934.57	-941.79	14,596,034.14	1,644,384.20
Point 72	0.00	-5,904.80	-923.11	14,596,063.91	1,644,402.87
Point 73	0.00	-5,876.51	-902.26	14,596,092.21	1,644,423.71
Point 74	0.00	-5,849.86	-879.35	14,596,118.86	1,644,446.62
Point 75	0.00	-5,824.98	-854.51	14,596,143.75	1,644,471.45
Point 76	0.00	-5,802.05	-827.88	14,596,166.68	1,644,498.08
Point 77	0.00	-5,781.15	-799.62	14,596,187.59	1,644,526.33
Point 78	0.00	-5,762.44	-769.86	14,596,206.30	1,644,556.09
Point 79	0.00	-5,745.99	-738.80	14,596,222.76	1,644,587.15
Point 80	0.00	-5,731.92	-706.60	14,596,236.84	1,644,619.35
Point 81	0.00	-5,720.30	-673.43	14,596,248.46	1,644,652.51
Point 82	0.00	-5,711.17	-639.48	14,596,257.60	1,644,686.46
Point 83	0.00	-5,704.62	-604.95	14,596,264.16	1,644,720.99
Point 84	0.00	-5,700.67	-570.03	14,596,268.11	1,644,755.91
Point 85	0.00	-5,699.33	-534.91	14,596,269.46	1,644,791.03
Point 86	0.00	-5,719.31	-534.17	14,596,249.48	1,644,791.77
Point 87	0.00	-5,720.54	-567.80	14,596,248.24	1,644,758.14
Point 88	0.00	-5,724.27	-601.24	14,596,244.51	1,644,724.70
Point 89	0.00	-5,730.49	-634.31	14,596,238.28	1,644,691.63
Point 90	0.00	-5,739.17	-666.83	14,596,229.59	1,644,659.12
Point 91	0.00	-5,750.25	-698.60	14,596,218.51	1,644,627.35
Point 92	0.00	-5,763.68	-729.46	14,596,205.07	1,644,596.49
Point 93	0.00	-5,779.37	-759.23	14,596,189.38	1,644,566.72
Point 94	0.00	-5,797.24	-787.74	14,596,171.50	1,644,538.22
Point 95	0.00	-5,817.21	-814.84	14,596,151.52	1,644,511.12
Point 96	0.00	-5,839.13	-840.37	14,596,129.60	1,644,485.60
Point 97	0.00	-5,862.90	-864.19	14,596,105.83	1,644,461.78

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HILGERS 15N-27HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Site:	3N-68W-22 Hilgers 16-22HZ Pad	North Reference:	True
Well:	HILGERS 15N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Point 98	0.00	-5,888.38	-886.17	14,596,080.34	1,644,439.81
Point 99	0.00	-5,915.44	-906.17	14,596,053.28	1,644,419.81
Point 100	0.00	-5,943.92	-924.11	14,596,024.79	1,644,401.88
Point 101	0.00	-5,973.65	-939.87	14,595,995.06	1,644,386.12
Point 102	0.00	-6,004.48	-953.35	14,595,964.23	1,644,372.65
Point 103	0.00	-6,036.24	-964.51	14,595,932.47	1,644,361.50
Point 104	0.00	-6,068.74	-973.25	14,595,899.96	1,644,352.76
Point 105	0.00	-6,101.80	-979.54	14,595,866.90	1,644,346.48
Point 106	0.00	-6,135.24	-983.34	14,595,833.46	1,644,342.68
Point 107	0.00	-6,168.86	-984.63	14,595,799.84	1,644,341.40
Point 108	0.00	-6,202.49	-983.41	14,595,766.21	1,644,342.63
Point 109	0.00	-6,235.94	-979.68	14,595,732.76	1,644,346.36
Point 110	0.00	-6,269.01	-973.45	14,595,699.69	1,644,352.60
Point 111	0.00	-6,301.52	-964.78	14,595,667.19	1,644,361.28
Point 112	0.00	-6,333.30	-953.70	14,595,635.41	1,644,372.36
Point 113	0.00	-6,364.15	-940.27	14,595,604.56	1,644,385.80
Point 114	0.00	-6,393.93	-924.58	14,595,574.78	1,644,401.50
Point 115	0.00	-6,422.44	-906.71	14,595,546.28	1,644,419.37
Point 116	0.00	-6,449.53	-886.74	14,595,519.19	1,644,439.35
Point 117	0.00	-6,475.07	-864.82	14,595,493.65	1,644,461.27
Point 118	0.00	-6,498.88	-841.05	14,595,469.85	1,644,485.05
Point 119	0.00	-6,520.87	-815.56	14,595,447.86	1,644,510.54
Point 120	0.00	-6,540.87	-788.51	14,595,427.87	1,644,537.60
Point 121	0.00	-6,558.81	-760.03	14,595,409.94	1,644,566.08
Point 122	0.00	-6,574.57	-730.30	14,595,394.18	1,644,595.81
Point 123	0.00	-6,588.05	-699.47	14,595,380.71	1,644,626.64
Point 124	0.00	-6,599.20	-667.71	14,595,369.56	1,644,658.41
Point 125	0.00	-6,607.94	-635.21	14,595,360.83	1,644,690.91
Point 126	0.00	-6,614.23	-602.15	14,595,354.55	1,644,723.97
Point 127	0.00	-6,618.04	-568.71	14,595,350.74	1,644,757.41
Point 128	0.00	-6,619.31	-534.71	14,595,349.48	1,644,791.41
Point 129	0.00	-6,618.11	-501.46	14,595,350.69	1,644,824.66
Point 130	0.00	-6,614.38	-468.01	14,595,354.42	1,644,858.11
Point 131	0.00	-6,608.15	-434.94	14,595,360.66	1,644,891.18
Point 132	0.00	-6,599.47	-402.43	14,595,369.35	1,644,923.69
Point 133	0.00	-6,588.40	-370.65	14,595,380.42	1,644,955.46
Point 134	0.00	-6,574.96	-339.80	14,595,393.87	1,644,986.31
Point 135	0.00	-6,559.27	-310.02	14,595,409.56	1,645,016.09
Point 136	0.00	-6,541.39	-281.51	14,595,427.45	1,645,044.60
Point 137	0.00	-6,521.44	-254.41	14,595,447.41	1,645,071.69
Point 138	0.00	-6,499.51	-228.88	14,595,469.34	1,645,097.22
Point 139	0.00	-6,475.75	-205.07	14,595,493.11	1,645,121.02
Point 140	0.00	-6,450.26	-183.08	14,595,518.60	1,645,143.01
Point 141	0.00	-6,423.21	-163.08	14,595,545.65	1,645,163.00
Point 142	0.00	-6,394.73	-145.14	14,595,574.14	1,645,180.94
Point 143	0.00	-6,364.99	-129.38	14,595,603.88	1,645,196.69
Point 144	0.00	-6,334.16	-115.90	14,595,634.71	1,645,210.16
Point 145	0.00	-6,302.41	-104.75	14,595,666.47	1,645,221.31
Point 146	0.00	-6,269.91	-96.00	14,595,698.97	1,645,230.05
Point 147	0.00	-6,236.85	-89.72	14,595,732.03	1,645,236.33
Point 148	0.00	-6,203.41	-85.91	14,595,765.47	1,645,240.13
Point 149	0.00	-6,169.78	-84.62	14,595,799.10	1,645,241.41
Point 150	0.00	-6,136.15	-85.84	14,595,832.73	1,645,240.19
Point 151	0.00	-6,102.71	-89.57	14,595,866.17	1,645,236.45
Point 152	0.00	-6,069.64	-95.80	14,595,899.24	1,645,230.21
Point 153	0.00	-6,037.12	-104.48	14,595,931.76	1,645,221.53
Point 154	0.00	-6,005.35	-115.56	14,595,963.52	1,645,210.44
Point 155	0.00	-5,974.48	-128.99	14,595,994.39	1,645,197.00
Point 156	0.00	-5,944.72	-144.68	14,596,024.15	1,645,181.31
Point 157	0.00	-5,916.21	-162.55	14,596,052.65	1,645,163.43
Point 158	0.00	-5,889.11	-182.51	14,596,079.75	1,645,143.47
Point 159	0.00	-5,863.58	-204.43	14,596,105.28	1,645,121.54
Point 160	0.00	-5,839.75	-228.20	14,596,129.10	1,645,097.77
Point 161	0.00	-5,817.78	-253.69	14,596,151.07	1,645,072.27

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HILGERS 15N-27HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Site:	3N-68W-22 Hilgers 16-22HZ Pad	North Reference:	True
Well:	HILGERS 15N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Point 162	0.00	-5,797.77	-280.74	14,596,171.07	1,645,045.22		
Point 163	0.00	-5,779.84	-309.22	14,596,189.00	1,645,016.73		
Point 164	0.00	-5,764.08	-338.95	14,596,204.75	1,644,987.00		
Point 165	0.00	-5,750.60	-369.79	14,596,218.22	1,644,956.16		
Point 166	0.00	-5,739.44	-401.54	14,596,229.38	1,644,924.41		
Point 167	0.00	-5,730.70	-434.04	14,596,238.11	1,644,891.90		
Point 168	0.00	-5,724.41	-467.10	14,596,244.39	1,644,858.84		
Point 169	0.00	-5,720.61	-500.54	14,596,248.19	1,644,825.40		
Point 170	0.00	-5,719.31	-534.92	14,596,249.48	1,644,791.02		
Point 171	0.00	-5,699.33	-534.16	14,596,269.46	1,644,791.78		
3N-R68W-Sec. 26_Secti	0.00	0.00	0.00	-15.08	14,601,968.89	1,645,309.73	40.206606 -104.982475
- plan misses target center by 15.08usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)							
- Polygon							
Point 1	0.00	-842.64	823.41	14,601,126.42	1,646,133.31		
Point 2	0.00	-816.40	6,107.25	14,601,153.70	1,651,417.14		
Point 3	0.00	-6,122.12	6,096.28	14,595,847.98	1,651,407.23		
Point 4	0.00	-6,154.53	782.53	14,595,814.52	1,646,093.48		
3N-R68W-Sec. 22_Secti	0.00	0.00	15.00	2,787.60	290.06	14,604,756.55	40.214261 -104.981382
- plan misses target center by 2802.65usft at 15.00usft MD (15.00 TVD, 0.00 N, 0.00 E)							
- Polygon							
Point 1	15.00	1,609.13	-4,756.64	14,606,364.74	1,640,857.36		
Point 2	15.00	1,644.10	-2,132.46	14,606,400.23	1,643,481.53		
Point 3	15.00	1,698.21	493.16	14,606,454.86	1,646,107.14		
Point 4	15.00	-967.02	505.37	14,603,789.63	1,646,119.88		
Point 5	15.00	-3,630.21	518.25	14,601,126.44	1,646,133.29		
Point 6	15.00	-3,681.09	-2,110.42	14,601,075.04	1,643,504.63		
Point 7	15.00	-3,689.13	-4,746.07	14,601,066.48	1,640,868.98		
Point 8	15.00	-1,042.08	-4,750.66	14,603,713.53	1,640,863.87		
HILGERS 15N-27HZ_Bt	0.00	0.00	7,134.00	-6,079.15	-874.41	14,595,889.57	40.189912 -104.985552
- plan hits target center							
- Point							

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")		
1,831.19	1,800.00	9 5/8"	9-5/8	13-1/2		
7,631.85	7,151.00	Top of Production	5-1/2	7-7/8		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
316.00	316.00	Fox Hills				
4,268.28	4,156.00	Sussex				
7,168.03	6,990.80	Sharon Springs				
7,296.56	7,065.80	Niobrara Top				
7,448.20	7,125.30	Niobrara B Bench				
7,448.20	7,125.30	Niobrara C Bench				

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well HILGERS 15N-27HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5016.00usft (D Rig)
Site:	3N-68W-22 Hilgers 16-22HZ Pad	North Reference:	True
Well:	HILGERS 15N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
250.00	250.00	0.00	0.00	Begin Nudge @ 250.00ft
1,250.00	1,238.62	-52.94	-118.90	End Nudge @ 1250.00ft
4,050.00	3,943.21	-347.70	-780.94	Begin Drop @ 4050.00ft
4,800.00	4,684.67	-387.40	-870.12	End Drop @ 4800.00ft
6,629.71	6,514.38	-387.40	-870.12	KOP @ 6629.71ft
7,200.00	7,011.40	-626.21	-870.30	DLS = 9°/100'
7,631.85	7,151.00	-1,026.16	-870.60	End Build @ 7631.85ft
12,684.87	7,134.00	-6,079.15	-874.41	TD Well @ 12684.87ft