

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
2N-65W-13 Swartz No1 Pad
SWARTZ 27C-12HZ**

Plan A

Plan: Permit Rev-1

Standard Planning Report

30 July, 2015

Project: WELD-NAD83-UTMFT13N

Site: 2N-65W-13 Swartz No1 Pad

Well: SWARTZ 27C-12HZ

Wellbore: Plan A

Design: Permit Rev-1

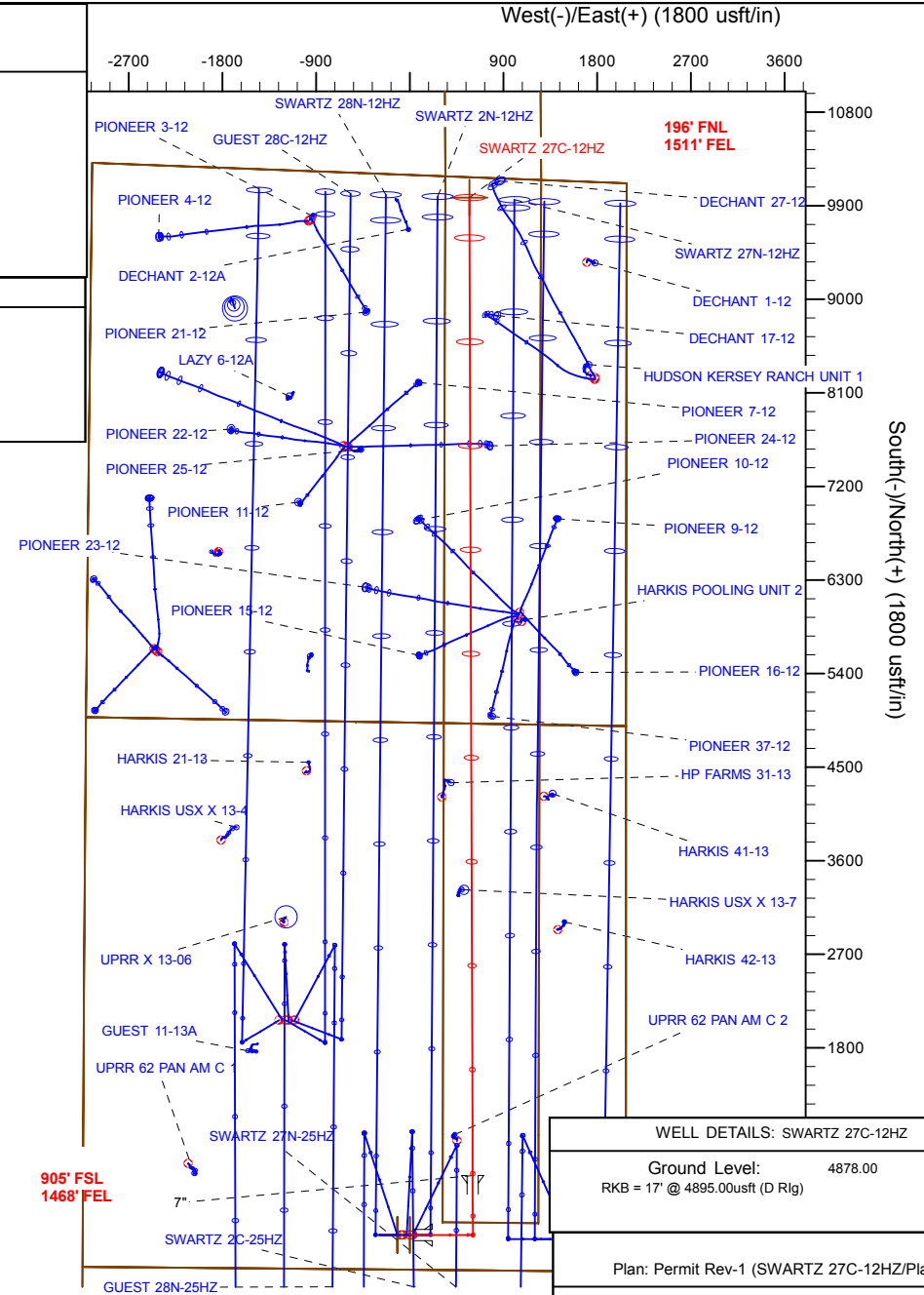
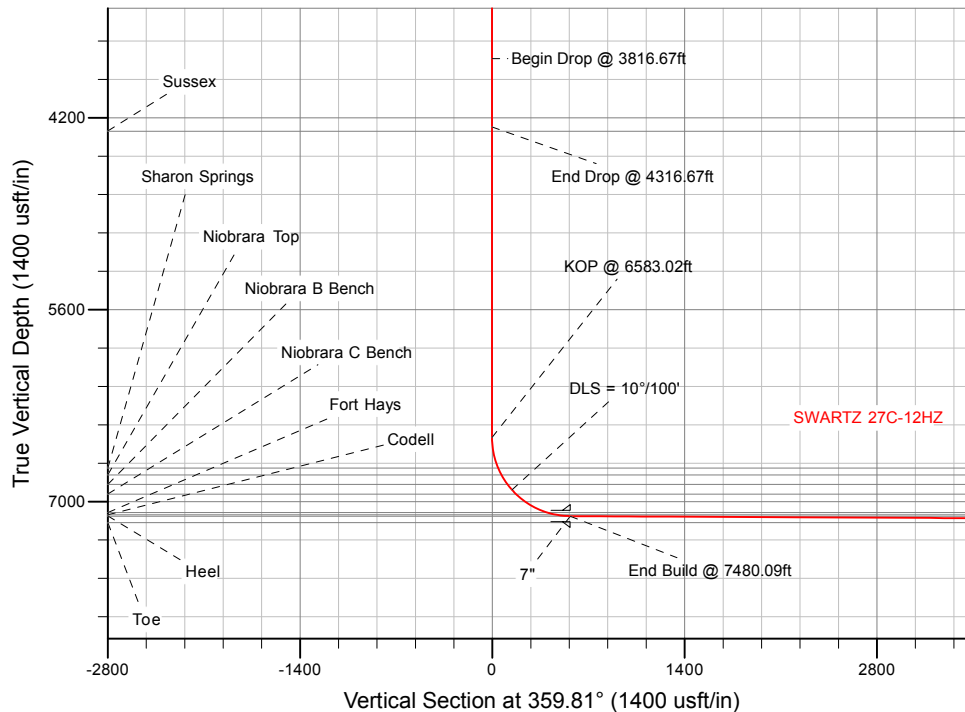
US ROCKIES WATTENBERG PLANNING

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	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	916.67	10.00	90.00	913.29	0.00	58.03	1.50	90.00	-0.19	
4	3816.67	10.00	90.00	3769.23	0.00	561.61	0.00	0.00	-1.86	
5	4316.67	0.00	0.00	4266.70	0.00	605.13	2.00	180.00	-2.01	
6	6583.02	0.00	0.00	6533.05	0.00	605.13	0.00	0.00	-2.01	
7	7480.09	89.71	359.81	7106.00	570.03	603.22	10.00	359.81	568.03	
8	16887.72	89.71	359.81	7154.00	9977.48	571.62	0.00	0.00	9975.53	SWARTZ 27C-12HZ_TOE

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
SWARTZ 27C-12HZ_SHL	0.00	0.00	0.00	40.132086	-104.610365	Point
SWARTZ 27C-12HZ_TOE	7154.00	9977.48	571.62	40.159485	-104.608319	Point



WELL DETAILS: SWARTZ 27C-12HZ

Ground Level: 4878.00
RKB = 17' @ 4895.00usft (D Rig)

Plan: Permit Rev-1 (SWARTZ 27C-12HZ/Plan A)

Created By: Clint Eshelman Date: 7/30/2015
Reviewed: Date:

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 27C-12HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4895.00usft (D Rlg)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4895.00usft (D Rlg)
Site:	2N-65W-13 Swartz No1 Pad	North Reference:	True
Well:	SWARTZ 27C-12HZ	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	2N-65W-13 Swartz No1 Pad			
Site Position:		Northing:	14,575,070.39 usft	Latitude: 40.132087
From:	Lat/Long	Easting:	1,749,204.01 usft	Longitude: -104.610794
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.25 °

Well	SWARTZ 27C-12HZ					
Well Position	+N/-S	-0.36 usft	Northing:	14,575,070.55 usft	Latitude:	40.132086
	+E/-W	119.91 usft	Easting:	1,749,323.92 usft	Longitude:	-104.610365
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,878.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/29/2015	8.20	66.72	52,572

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	359.81

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	
916.67	10.00	90.00	913.29	0.00	58.03	1.50	1.50	0.00	90.00	
3,816.67	10.00	90.00	3,769.23	0.00	561.61	0.00	0.00	0.00	0.00	
4,316.67	0.00	0.00	4,266.70	0.00	605.13	2.00	-2.00	0.00	180.00	
6,583.02	0.00	0.00	6,533.05	0.00	605.13	0.00	0.00	0.00	0.00	
7,480.09	89.71	359.81	7,106.00	570.03	603.22	10.00	10.00	-0.02	359.81	
16,887.72	89.71	359.81	7,154.00	9,977.48	571.62	0.00	0.00	0.00	0.00	SWARTZ 27C-12HZ_

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 27C-12HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4895.00usft (D Rlg)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4895.00usft (D Rlg)
Site:	2N-65W-13 Swartz No1 Pad	North Reference:	True
Well:	SWARTZ 27C-12HZ	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
2N-R65W-Sec. 25_Section lines - 2N-R65W-Sec. 13_Section lines - 2N-R65W-Sec. 12_Section lines - SWARTZ 27C-12HZ_Drilling Window									
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	90.00	300.00	0.00	0.33	0.00	1.50	1.50	0.00
400.00	2.25	90.00	399.96	0.00	2.94	-0.01	1.50	1.50	0.00
500.00	3.75	90.00	499.82	0.00	8.18	-0.03	1.50	1.50	0.00
600.00	5.25	90.00	599.51	0.00	16.02	-0.05	1.50	1.50	0.00
700.00	6.75	90.00	698.96	0.00	26.48	-0.09	1.50	1.50	0.00
800.00	8.25	90.00	798.10	0.00	39.53	-0.13	1.50	1.50	0.00
900.00	9.75	90.00	896.87	0.00	55.17	-0.18	1.50	1.50	0.00
916.67	10.00	90.00	913.29	0.00	58.03	-0.19	1.50	1.50	0.00
End Nudge @ 916.67ft									
1,000.00	10.00	90.00	995.35	0.00	72.50	-0.24	0.00	0.00	0.00
1,100.00	10.00	90.00	1,093.84	0.00	89.87	-0.30	0.00	0.00	0.00
1,200.00	10.00	90.00	1,192.32	0.00	107.23	-0.36	0.00	0.00	0.00
1,300.00	10.00	90.00	1,290.80	0.00	124.60	-0.41	0.00	0.00	0.00
1,303.25	10.00	90.00	1,294.00	0.00	125.16	-0.42	0.00	0.00	0.00
Fox Hills									
1,400.00	10.00	90.00	1,389.28	0.00	141.96	-0.47	0.00	0.00	0.00
1,500.00	10.00	90.00	1,487.76	0.00	159.32	-0.53	0.00	0.00	0.00
1,600.00	10.00	90.00	1,586.24	0.00	176.69	-0.59	0.00	0.00	0.00
1,700.00	10.00	90.00	1,684.72	0.00	194.05	-0.64	0.00	0.00	0.00
1,800.00	10.00	90.00	1,783.20	0.00	211.42	-0.70	0.00	0.00	0.00
1,817.06	10.00	90.00	1,800.00	0.00	214.38	-0.71	0.00	0.00	0.00
9 5/8"									
1,900.00	10.00	90.00	1,881.68	0.00	228.78	-0.76	0.00	0.00	0.00
2,000.00	10.00	90.00	1,980.16	0.00	246.15	-0.82	0.00	0.00	0.00
2,100.00	10.00	90.00	2,078.64	0.00	263.51	-0.87	0.00	0.00	0.00
2,200.00	10.00	90.00	2,177.12	0.00	280.88	-0.93	0.00	0.00	0.00
2,300.00	10.00	90.00	2,275.60	0.00	298.24	-0.99	0.00	0.00	0.00
2,400.00	10.00	90.00	2,374.09	0.00	315.61	-1.05	0.00	0.00	0.00
2,500.00	10.00	90.00	2,472.57	0.00	332.97	-1.10	0.00	0.00	0.00
2,600.00	10.00	90.00	2,571.05	0.00	350.34	-1.16	0.00	0.00	0.00
2,700.00	10.00	90.00	2,669.53	0.00	367.70	-1.22	0.00	0.00	0.00
2,800.00	10.00	90.00	2,768.01	0.00	385.07	-1.28	0.00	0.00	0.00
2,900.00	10.00	90.00	2,866.49	0.00	402.43	-1.33	0.00	0.00	0.00
3,000.00	10.00	90.00	2,964.97	0.00	419.80	-1.39	0.00	0.00	0.00
3,100.00	10.00	90.00	3,063.45	0.00	437.16	-1.45	0.00	0.00	0.00
3,200.00	10.00	90.00	3,161.93	0.00	454.53	-1.51	0.00	0.00	0.00
3,300.00	10.00	90.00	3,260.41	0.00	471.89	-1.56	0.00	0.00	0.00
3,400.00	10.00	90.00	3,358.89	0.00	489.26	-1.62	0.00	0.00	0.00
3,500.00	10.00	90.00	3,457.37	0.00	506.62	-1.68	0.00	0.00	0.00
3,600.00	10.00	90.00	3,555.85	0.00	523.99	-1.74	0.00	0.00	0.00
3,700.00	10.00	90.00	3,654.34	0.00	541.35	-1.80	0.00	0.00	0.00
3,800.00	10.00	90.00	3,752.82	0.00	558.72	-1.85	0.00	0.00	0.00
3,816.67	10.00	90.00	3,769.23	0.00	561.61	-1.86	0.00	0.00	0.00
Begin Drop @ 3816.67ft									
3,900.00	8.33	90.00	3,851.50	0.00	574.88	-1.91	2.00	-2.00	0.00
4,000.00	6.33	90.00	3,950.67	0.00	587.65	-1.95	2.00	-2.00	0.00
4,100.00	4.33	90.00	4,050.23	0.00	596.94	-1.98	2.00	-2.00	0.00

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Planning Report

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Site:	2N-65W-13 Swartz No1 Pad	North Reference:	True
Well:	SWARTZ 27C-12HZ	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)
4,200.00	2.33	90.00	4,150.06	0.00	602.76	-2.00	2.00	-2.00	0.00
4,300.00	0.33	90.00	4,250.03	0.00	605.08	-2.01	2.00	-2.00	0.00
4,316.67	0.00	0.00	4,266.70	0.00	605.13	-2.01	2.00	-2.00	0.00
End Drop @ 4316.67ft									
4,347.97	0.00	0.00	4,298.00	0.00	605.13	-2.01	0.00	0.00	0.00
Sussex									
4,400.00	0.00	0.00	4,350.03	0.00	605.13	-2.01	0.00	0.00	0.00
4,500.00	0.00	0.00	4,450.03	0.00	605.13	-2.01	0.00	0.00	0.00
4,600.00	0.00	0.00	4,550.03	0.00	605.13	-2.01	0.00	0.00	0.00
4,700.00	0.00	0.00	4,650.03	0.00	605.13	-2.01	0.00	0.00	0.00
4,800.00	0.00	0.00	4,750.03	0.00	605.13	-2.01	0.00	0.00	0.00
4,900.00	0.00	0.00	4,850.03	0.00	605.13	-2.01	0.00	0.00	0.00
5,000.00	0.00	0.00	4,950.03	0.00	605.13	-2.01	0.00	0.00	0.00
5,100.00	0.00	0.00	5,050.03	0.00	605.13	-2.01	0.00	0.00	0.00
5,200.00	0.00	0.00	5,150.03	0.00	605.13	-2.01	0.00	0.00	0.00
5,300.00	0.00	0.00	5,250.03	0.00	605.13	-2.01	0.00	0.00	0.00
5,400.00	0.00	0.00	5,350.03	0.00	605.13	-2.01	0.00	0.00	0.00
5,500.00	0.00	0.00	5,450.03	0.00	605.13	-2.01	0.00	0.00	0.00
5,600.00	0.00	0.00	5,550.03	0.00	605.13	-2.01	0.00	0.00	0.00
5,700.00	0.00	0.00	5,650.03	0.00	605.13	-2.01	0.00	0.00	0.00
5,800.00	0.00	0.00	5,750.03	0.00	605.13	-2.01	0.00	0.00	0.00
5,900.00	0.00	0.00	5,850.03	0.00	605.13	-2.01	0.00	0.00	0.00
6,000.00	0.00	0.00	5,950.03	0.00	605.13	-2.01	0.00	0.00	0.00
6,100.00	0.00	0.00	6,050.03	0.00	605.13	-2.01	0.00	0.00	0.00
6,200.00	0.00	0.00	6,150.03	0.00	605.13	-2.01	0.00	0.00	0.00
6,300.00	0.00	0.00	6,250.03	0.00	605.13	-2.01	0.00	0.00	0.00
6,400.00	0.00	0.00	6,350.03	0.00	605.13	-2.01	0.00	0.00	0.00
6,500.00	0.00	0.00	6,450.03	0.00	605.13	-2.01	0.00	0.00	0.00
6,583.02	0.00	0.00	6,533.05	0.00	605.13	-2.01	0.00	0.00	0.00
KOP @ 6583.02ft									
6,600.00	1.70	359.81	6,550.03	0.25	605.13	-1.76	10.00	10.00	0.00
6,700.00	11.70	359.81	6,649.22	11.90	605.09	9.89	10.00	10.00	0.00
6,800.00	21.70	359.81	6,744.88	40.60	605.00	38.59	10.00	10.00	0.00
6,810.82	22.78	359.81	6,754.89	44.69	604.98	42.69	10.00	10.00	0.00
Sharon Springs									
6,866.26	28.32	359.81	6,804.89	68.60	604.90	66.59	10.00	10.00	0.00
Niobrara Top									
6,900.00	31.70	359.81	6,834.10	85.47	604.85	83.46	10.00	10.00	0.00
6,948.20	36.52	359.81	6,874.00	112.49	604.75	110.49	10.00	10.00	0.00
Niobrara B Bench									
7,000.00	41.70	359.81	6,914.18	145.15	604.64	143.15	10.00	10.00	0.00
DLS = 10°/100'									
7,044.23	46.12	359.81	6,946.04	175.82	604.54	173.81	10.00	10.00	0.00
Niobrara C Bench									
7,100.00	51.70	359.81	6,982.68	217.84	604.40	215.83	10.00	10.00	0.00
7,200.00	61.70	359.81	7,037.51	301.31	604.12	299.30	10.00	10.00	0.00
7,300.00	71.70	359.81	7,077.02	393.04	603.81	391.03	10.00	10.00	0.00
7,309.86	72.68	359.81	7,080.04	402.43	603.78	400.42	10.00	10.00	0.00
Fort Hays									
7,378.13	79.51	359.81	7,096.43	468.66	603.56	466.65	10.00	10.00	0.00
Codell									
7,400.00	81.70	359.81	7,100.00	490.23	603.49	488.22	10.00	10.00	0.00
7,480.09	89.71	359.81	7,106.00	570.03	603.22	568.02	10.00	10.00	0.00

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 27C-12HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4895.00usft (D Rlg)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4895.00usft (D Rlg)
Site:	2N-65W-13 Swartz No1 Pad	North Reference:	True
Well:	SWARTZ 27C-12HZ	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)
End Build @ 7480.09ft - Heel - 7"									
7,500.00	89.71	359.81	7,106.10	589.94	603.15	587.93	0.00	0.00	0.00
7,600.00	89.71	359.81	7,106.61	689.94	602.82	687.93	0.00	0.00	0.00
7,700.00	89.71	359.81	7,107.12	789.93	602.48	787.93	0.00	0.00	0.00
7,800.00	89.71	359.81	7,107.63	889.93	602.14	887.93	0.00	0.00	0.00
7,900.00	89.71	359.81	7,108.14	989.93	601.81	987.93	0.00	0.00	0.00
8,000.00	89.71	359.81	7,108.65	1,089.93	601.47	1,087.93	0.00	0.00	0.00
8,100.00	89.71	359.81	7,109.16	1,189.93	601.14	1,187.93	0.00	0.00	0.00
8,200.00	89.71	359.81	7,109.67	1,289.92	600.80	1,287.93	0.00	0.00	0.00
8,300.00	89.71	359.81	7,110.18	1,389.92	600.46	1,387.92	0.00	0.00	0.00
8,400.00	89.71	359.81	7,110.69	1,489.92	600.13	1,487.92	0.00	0.00	0.00
8,500.00	89.71	359.81	7,111.20	1,589.92	599.79	1,587.92	0.00	0.00	0.00
8,600.00	89.71	359.81	7,111.71	1,689.92	599.46	1,687.92	0.00	0.00	0.00
8,700.00	89.71	359.81	7,112.22	1,789.92	599.12	1,787.92	0.00	0.00	0.00
8,800.00	89.71	359.81	7,112.73	1,889.91	598.78	1,887.92	0.00	0.00	0.00
8,900.00	89.71	359.81	7,113.24	1,989.91	598.45	1,987.92	0.00	0.00	0.00
9,000.00	89.71	359.81	7,113.75	2,089.91	598.11	2,087.91	0.00	0.00	0.00
9,100.00	89.71	359.81	7,114.26	2,189.91	597.78	2,187.91	0.00	0.00	0.00
9,200.00	89.71	359.81	7,114.77	2,289.91	597.44	2,287.91	0.00	0.00	0.00
9,300.00	89.71	359.81	7,115.28	2,389.90	597.11	2,387.91	0.00	0.00	0.00
9,400.00	89.71	359.81	7,115.79	2,489.90	596.77	2,487.91	0.00	0.00	0.00
9,500.00	89.71	359.81	7,116.30	2,589.90	596.43	2,587.91	0.00	0.00	0.00
9,600.00	89.71	359.81	7,116.81	2,689.90	596.10	2,687.91	0.00	0.00	0.00
9,700.00	89.71	359.81	7,117.32	2,789.90	595.76	2,787.91	0.00	0.00	0.00
9,800.00	89.71	359.81	7,117.83	2,889.89	595.43	2,887.90	0.00	0.00	0.00
9,900.00	89.71	359.81	7,118.34	2,989.89	595.09	2,987.90	0.00	0.00	0.00
10,000.00	89.71	359.81	7,118.85	3,089.89	594.75	3,087.90	0.00	0.00	0.00
10,100.00	89.71	359.81	7,119.36	3,189.89	594.42	3,187.90	0.00	0.00	0.00
10,200.00	89.71	359.81	7,119.87	3,289.89	594.08	3,287.90	0.00	0.00	0.00
10,300.00	89.71	359.81	7,120.38	3,389.89	593.75	3,387.90	0.00	0.00	0.00
10,400.00	89.71	359.81	7,120.90	3,489.88	593.41	3,487.90	0.00	0.00	0.00
10,500.00	89.71	359.81	7,121.41	3,589.88	593.07	3,587.90	0.00	0.00	0.00
10,600.00	89.71	359.81	7,121.92	3,689.88	592.74	3,687.89	0.00	0.00	0.00
10,700.00	89.71	359.81	7,122.43	3,789.88	592.40	3,787.89	0.00	0.00	0.00
10,800.00	89.71	359.81	7,122.94	3,889.88	592.07	3,887.89	0.00	0.00	0.00
10,900.00	89.71	359.81	7,123.45	3,989.87	591.73	3,987.89	0.00	0.00	0.00
11,000.00	89.71	359.81	7,123.96	4,089.87	591.40	4,087.89	0.00	0.00	0.00
11,100.00	89.71	359.81	7,124.47	4,189.87	591.06	4,187.89	0.00	0.00	0.00
11,200.00	89.71	359.81	7,124.98	4,289.87	590.72	4,287.89	0.00	0.00	0.00
11,300.00	89.71	359.81	7,125.49	4,389.87	590.39	4,387.88	0.00	0.00	0.00
11,400.00	89.71	359.81	7,126.00	4,489.86	590.05	4,487.88	0.00	0.00	0.00
11,500.00	89.71	359.81	7,126.51	4,589.86	589.72	4,587.88	0.00	0.00	0.00
11,600.00	89.71	359.81	7,127.02	4,689.86	589.38	4,687.88	0.00	0.00	0.00
11,700.00	89.71	359.81	7,127.53	4,789.86	589.04	4,787.88	0.00	0.00	0.00
11,800.00	89.71	359.81	7,128.04	4,889.86	588.71	4,887.88	0.00	0.00	0.00
11,900.00	89.71	359.81	7,128.55	4,989.86	588.37	4,987.88	0.00	0.00	0.00
12,000.00	89.71	359.81	7,129.06	5,089.85	588.04	5,087.88	0.00	0.00	0.00
12,100.00	89.71	359.81	7,129.57	5,189.85	587.70	5,187.87	0.00	0.00	0.00
12,200.00	89.71	359.81	7,130.08	5,289.85	587.36	5,287.87	0.00	0.00	0.00
12,300.00	89.71	359.81	7,130.59	5,389.85	587.03	5,387.87	0.00	0.00	0.00
12,400.00	89.71	359.81	7,131.10	5,489.85	586.69	5,487.87	0.00	0.00	0.00
12,500.00	89.71	359.81	7,131.61	5,589.84	586.36	5,587.87	0.00	0.00	0.00
12,600.00	89.71	359.81	7,132.12	5,689.84	586.02	5,687.87	0.00	0.00	0.00

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 27C-12HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4895.00usft (D Rlg)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4895.00usft (D Rlg)
Site:	2N-65W-13 Swartz No1 Pad	North Reference:	True
Well:	SWARTZ 27C-12HZ	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)
12,700.00	89.71	359.81	7,132.63	5,789.84	585.69	5,787.87	0.00	0.00	0.00
12,800.00	89.71	359.81	7,133.14	5,889.84	585.35	5,887.87	0.00	0.00	0.00
12,900.00	89.71	359.81	7,133.65	5,989.84	585.01	5,987.86	0.00	0.00	0.00
13,000.00	89.71	359.81	7,134.16	6,089.84	584.68	6,087.86	0.00	0.00	0.00
13,100.00	89.71	359.81	7,134.67	6,189.83	584.34	6,187.86	0.00	0.00	0.00
13,200.00	89.71	359.81	7,135.18	6,289.83	584.01	6,287.86	0.00	0.00	0.00
13,300.00	89.71	359.81	7,135.69	6,389.83	583.67	6,387.86	0.00	0.00	0.00
13,400.00	89.71	359.81	7,136.20	6,489.83	583.33	6,487.86	0.00	0.00	0.00
13,500.00	89.71	359.81	7,136.71	6,589.83	583.00	6,587.86	0.00	0.00	0.00
13,600.00	89.71	359.81	7,137.22	6,689.82	582.66	6,687.85	0.00	0.00	0.00
13,700.00	89.71	359.81	7,137.73	6,789.82	582.33	6,787.85	0.00	0.00	0.00
13,800.00	89.71	359.81	7,138.24	6,889.82	581.99	6,887.85	0.00	0.00	0.00
13,900.00	89.71	359.81	7,138.75	6,989.82	581.65	6,987.85	0.00	0.00	0.00
14,000.00	89.71	359.81	7,139.26	7,089.82	581.32	7,087.85	0.00	0.00	0.00
14,100.00	89.71	359.81	7,139.78	7,189.81	580.98	7,187.85	0.00	0.00	0.00
14,200.00	89.71	359.81	7,140.29	7,289.81	580.65	7,287.85	0.00	0.00	0.00
14,300.00	89.71	359.81	7,140.80	7,389.81	580.31	7,387.85	0.00	0.00	0.00
14,400.00	89.71	359.81	7,141.31	7,489.81	579.98	7,487.84	0.00	0.00	0.00
14,500.00	89.71	359.81	7,141.82	7,589.81	579.64	7,587.84	0.00	0.00	0.00
14,600.00	89.71	359.81	7,142.33	7,689.81	579.30	7,687.84	0.00	0.00	0.00
14,700.00	89.71	359.81	7,142.84	7,789.80	578.97	7,787.84	0.00	0.00	0.00
14,800.00	89.71	359.81	7,143.35	7,889.80	578.63	7,887.84	0.00	0.00	0.00
14,900.00	89.71	359.81	7,143.86	7,989.80	578.30	7,987.84	0.00	0.00	0.00
15,000.00	89.71	359.81	7,144.37	8,089.80	577.96	8,087.84	0.00	0.00	0.00
15,100.00	89.71	359.81	7,144.88	8,189.80	577.62	8,187.84	0.00	0.00	0.00
15,200.00	89.71	359.81	7,145.39	8,289.79	577.29	8,287.83	0.00	0.00	0.00
15,300.00	89.71	359.81	7,145.90	8,389.79	576.95	8,387.83	0.00	0.00	0.00
15,400.00	89.71	359.81	7,146.41	8,489.79	576.62	8,487.83	0.00	0.00	0.00
15,500.00	89.71	359.81	7,146.92	8,589.79	576.28	8,587.83	0.00	0.00	0.00
15,600.00	89.71	359.81	7,147.43	8,689.79	575.95	8,687.83	0.00	0.00	0.00
15,700.00	89.71	359.81	7,147.94	8,789.78	575.61	8,787.83	0.00	0.00	0.00
15,800.00	89.71	359.81	7,148.45	8,889.78	575.27	8,887.83	0.00	0.00	0.00
15,900.00	89.71	359.81	7,148.96	8,989.78	574.94	8,987.83	0.00	0.00	0.00
16,000.00	89.71	359.81	7,149.47	9,089.78	574.60	9,087.82	0.00	0.00	0.00
16,100.00	89.71	359.81	7,149.98	9,189.78	574.27	9,187.82	0.00	0.00	0.00
16,200.00	89.71	359.81	7,150.49	9,289.78	573.93	9,287.82	0.00	0.00	0.00
16,300.00	89.71	359.81	7,151.00	9,389.77	573.59	9,387.82	0.00	0.00	0.00
16,400.00	89.71	359.81	7,151.51	9,489.77	573.26	9,487.82	0.00	0.00	0.00
16,500.00	89.71	359.81	7,152.02	9,589.77	572.92	9,587.82	0.00	0.00	0.00
16,600.00	89.71	359.81	7,152.53	9,689.77	572.59	9,687.82	0.00	0.00	0.00
16,700.00	89.71	359.81	7,153.04	9,789.77	572.25	9,787.81	0.00	0.00	0.00
16,800.00	89.71	359.81	7,153.55	9,889.76	571.91	9,887.81	0.00	0.00	0.00
16,887.71	89.71	359.81	7,154.00	9,977.47	571.62	9,975.52	0.00	0.00	0.00
Toe									
16,887.72	89.71	359.81	7,154.00	9,977.48	571.62	9,975.53	0.00	0.00	0.00
TD Well @ 16887.72ft - SWARTZ 27C-12HZ_TOE									

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 27C-12HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4895.00usft (D Rlg)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4895.00usft (D Rlg)
Site:	2N-65W-13 Swartz No1 Pad	North Reference:	True
Well:	SWARTZ 27C-12HZ	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)		
SWARTZ 27C-12HZ_Dri	0.00	0.00	0.00	0.00	0.00	14,575,070.55	1,749,323.92	40.132086	-104.610365
- plan hits target center									
- Polygon									
Point 1			0.00	112.90	1,233.80	14,575,188.86	1,750,557.22		
Point 2			0.00	121.64	313.79	14,575,193.57	1,749,637.18		
Point 3			0.00	975.85	315.34	14,576,047.78	1,749,634.98		
Point 4			0.00	8,865.36	336.65	14,583,937.31	1,749,621.71		
Point 5			0.00	10,160.03	341.39	14,585,231.98	1,749,620.77		
Point 6			0.00	11,034.90	336.38	14,586,106.82	1,749,611.93		
Point 7			0.00	11,002.32	1,256.59	14,586,078.28	1,750,532.27		
Point 8			0.00	10,165.28	1,261.37	14,585,241.27	1,750,540.72		
Point 9			0.00	8,835.28	1,256.55	14,583,911.26	1,750,541.73		
Point 10			0.00	965.17	1,235.32	14,576,041.13	1,750,555.00		
Point 11			0.00	112.90	1,233.80	14,575,188.86	1,750,557.22		
SWARTZ 27C-12HZ_SF	0.00	0.00	0.00	0.00	0.00	14,575,070.55	1,749,323.92	40.132086	-104.610365
- plan hits target center									
- Point									
2N-R65W-Sec. 25_Secti	0.00	0.00	-78.00	0.36	-119.91	14,575,070.39	1,749,204.01	40.132087	-104.610794
- plan misses target center by 143.05usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			-78.00	-5,575.96	-3,064.67	14,569,481.05	1,746,163.81		
Point 2			-78.00	-5,592.14	-413.46	14,569,476.49	1,748,815.07		
Point 3			-78.00	-5,609.35	2,238.63	14,569,470.91	1,751,467.21		
Point 4			-78.00	-8,247.40	2,259.94	14,566,832.98	1,751,500.08		
Point 5			-78.00	-10,884.05	2,281.32	14,564,196.45	1,751,533.02		
Point 6			-78.00	-10,912.19	-413.54	14,564,156.50	1,748,838.31		
Point 7			-78.00	-11,002.15	-3,033.15	14,564,055.05	1,746,219.12		
Point 8			-78.00	-8,271.55	-3,044.64	14,566,785.58	1,746,195.66		
2N-R65W-Sec. 13_Secti	0.00	0.00	-78.00	0.36	-119.91	14,575,070.39	1,749,204.01	40.132087	-104.610794
- plan misses target center by 143.05usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			-78.00	4,980.35	-2,990.78	14,580,037.59	1,746,191.43		
Point 2			-78.00	4,936.75	-397.15	14,580,005.36	1,748,785.22		
Point 3			-78.00	4,893.27	2,196.04	14,579,973.24	1,751,378.58		
Point 4			-78.00	2,269.18	2,195.68	14,577,349.18	1,751,389.72		
Point 5			-78.00	-354.07	2,193.83	14,574,725.94	1,751,399.37		
Point 6			-78.00	-330.09	-414.94	14,574,738.49	1,748,790.52		
Point 7			-78.00	-306.12	-3,023.71	14,574,751.02	1,746,181.67		
Point 8			-78.00	2,332.94	-3,010.80	14,577,390.11	1,746,183.01		
2N-R65W-Sec. 12_Secti	0.00	0.00	-78.00	0.36	-119.91	14,575,070.39	1,749,204.01	40.132087	-104.610794
- plan misses target center by 143.05usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			-78.00	10,311.40	-2,932.44	14,585,368.84	1,746,226.40		
Point 2			-78.00	10,213.49	-365.25	14,585,282.18	1,748,793.99		
Point 3			-78.00	10,115.80	2,202.09	14,585,195.75	1,751,361.74		
Point 4			-78.00	7,504.68	2,199.03	14,582,584.64	1,751,370.12		
Point 5			-78.00	4,893.27	2,196.04	14,579,973.24	1,751,378.58		
Point 6			-78.00	4,936.75	-397.15	14,580,005.36	1,748,785.22		
Point 7			-78.00	4,980.35	-2,990.78	14,580,037.59	1,746,191.43		
Point 8			-78.00	7,645.87	-2,961.54	14,582,703.21	1,746,208.98		
2N-R65W-Sec. 24_Secti	0.00	0.00	-78.00	0.36	-119.91	14,575,070.39	1,749,204.01	40.132087	-104.610794
- plan misses target center by 143.05usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			-78.00	-306.12	-3,023.71	14,574,751.02	1,746,181.67		
Point 2			-78.00	-330.09	-414.94	14,574,738.49	1,748,790.52		

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 27C-12HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4895.00usft (D Rlg)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4895.00usft (D Rlg)
Site:	2N-65W-13 Swartz No1 Pad	North Reference:	True
Well:	SWARTZ 27C-12HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Point 3	-78.00	-354.07	2,193.83	14,574,725.94	1,751,399.37				
Point 4	-78.00	-2,981.13	2,216.36	14,572,099.01	1,751,433.42				
Point 5	-78.00	-5,609.35	2,238.63	14,569,470.91	1,751,467.21				
Point 6	-78.00	-5,592.14	-413.46	14,569,476.49	1,748,815.07				
Point 7	-78.00	-5,575.96	-3,064.67	14,569,481.05	1,746,163.81				
Point 8	-78.00	-2,941.37	-3,043.57	14,572,115.71	1,746,173.36				
SWARTZ 27C-12HZ_TC	0.00	0.00	7,154.00	9,977.48	571.62	14,585,050.44	1,749,851.80	40.159485	-104.608319
- plan hits target center									
- Point									

Casing Points									
Measured Depth (usft)	Vertical Depth (usft)	Name				Casing Diameter (")	Hole Diameter (")		
1,817.06	1,800.00	9 5/8"				9-5/8	13-1/2		
7,480.09	7,106.00	7"				7	8-3/4		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,303.25	1,294.00	Fox Hills		0.00		
4,347.97	4,298.00	Sussex		0.00		
6,810.82	6,754.89	Sharon Springs		0.00		
6,866.26	6,804.89	Niobrara Top		0.00		
6,948.20	6,874.00	Niobrara B Bench		0.00		
7,044.23	6,946.04	Niobrara C Bench		0.00		
7,309.86	7,080.04	Fort Hays		0.00		
7,378.13	7,096.43	Codell		0.00		
7,480.09	7,106.00	Heel		0.00		
16,887.71	7,154.00	Toe		0.00		

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	
916.67	913.29	0.00	58.03	End Nudge @ 916.67ft	
3,816.67	3,769.23	0.00	561.61	Begin Drop @ 3816.67ft	
4,316.67	4,266.70	0.00	605.13	End Drop @ 4316.67ft	
6,583.02	6,533.05	0.00	605.13	KOP @ 6583.02ft	
7,000.00	6,914.18	145.15	604.64	DLS = 10°/100'	
7,480.09	7,106.00	570.03	603.22	End Build @ 7480.09ft	
16,887.72	7,154.00	9,977.48	571.62	TD Well @ 16887.72ft	