

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
2N-65W-13 Swartz No2 Pad
SWARTZ 1C-25HZ**

Plan A

Plan: Permit Rev-1

Standard Planning Report

30 July, 2015

Project: WELD-NAD83-UTMFT13N

Site: 2N-65W-13 Swartz No2 Pad

Well: SWARTZ 1C-25HZ

Wellbore: Plan A

Design: Permit Rev-1

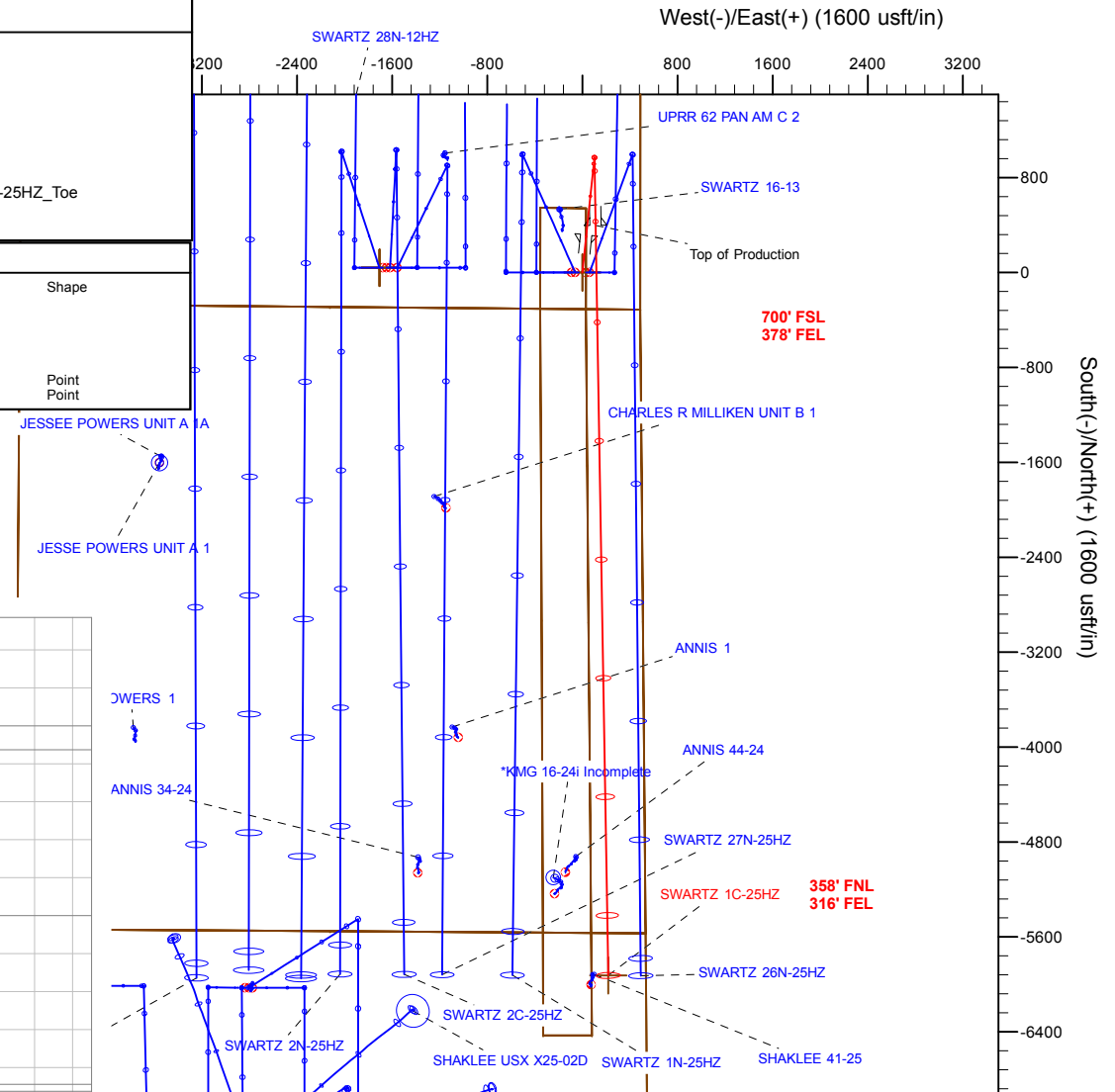
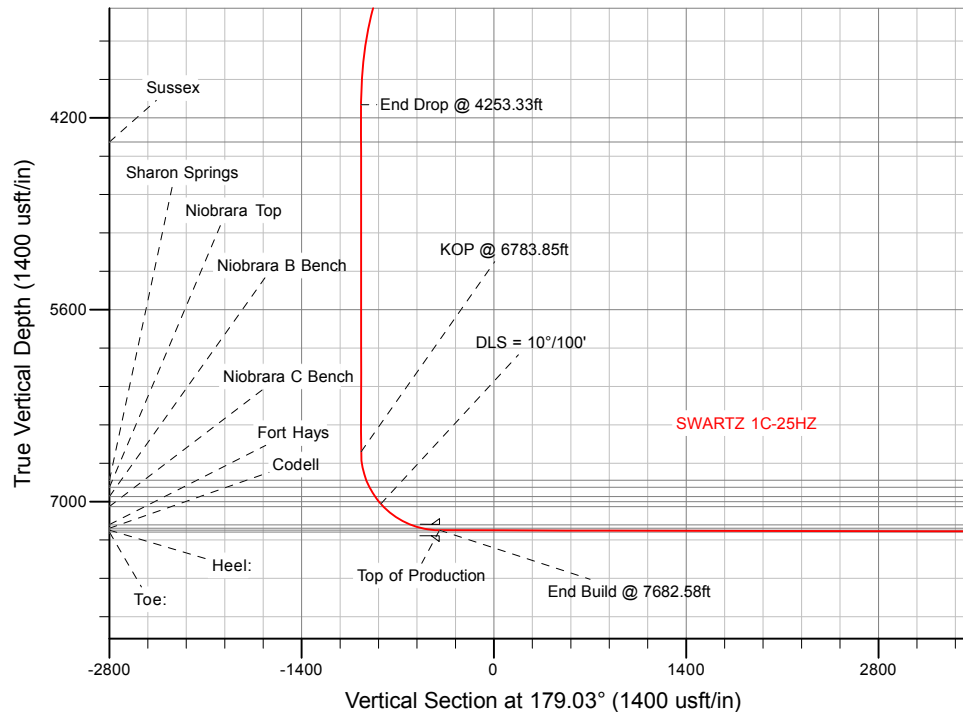
US ROCKIES WATTENBERG PLANNING

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	1583.33	20.00	6.00	1556.42	229.10	24.08	1.50	6.00	-228.65	
4	3253.33	20.00	6.00	3125.71	797.14	83.78	0.00	0.00	-795.61	
5	4253.33	0.00	0.00	4105.52	968.96	101.84	2.00	180.00	-967.10	
6	6783.85	0.00	0.00	6636.04	968.96	101.84	0.00	0.00	-967.10	
7	7682.58	89.87	179.03	7209.00	397.35	111.52	10.00	179.03	-395.41	
8	14005.63	89.87	179.03	7223.00	-5924.77	218.54	0.00	0.00	5927.62	SWARTZ 1C-25HZ_Toe

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
SWARTZ 1C-25HZ_SHL	0.00	0.00	0.00	40.131977	-104.604688	Point
SWARTZ 1C-25HZ_Toe	7223.00	-5924.77	218.54	40.115707	-104.603906	Point



WELL DETAILS: SWARTZ 1C-25HZ

Ground Level: 4956.00

RKB = 17' @ 4973.00usft (D Rig)

Plan: Permit Rev-1 (SWARTZ 1C-25HZ/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 1C-25HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4973.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4973.00usft (D Rig)
Site:	2N-65W-13 Swartz No2 Pad	North Reference:	True
Well:	SWARTZ 1C-25HZ	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 No2 Pad			
Site Position:		Northing:	14,575,037.83 usft	Latitude:	40.131978
From:	Lat/Long	Easting:	1,750,820.88 usft	Longitude:	-104.605010
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.25 °

Well	SWARTZ 1C-25HZ					
Well Position	+N/-S	-0.36 usft	Northing:	14,575,037.87 usft	Latitude:	40.131977
	+E/-W	90.00 usft	Easting:	1,750,910.89 usft	Longitude:	-104.604688
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,956.00 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	179.03

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	
1,583.33	20.00	6.00	1,556.42	229.10	24.08	1.50	1.50	0.00	6.00	
3,253.33	20.00	6.00	3,125.71	797.14	83.78	0.00	0.00	0.00	0.00	
4,253.33	0.00	0.00	4,105.52	968.96	101.84	2.00	-2.00	0.00	180.00	
6,783.85	0.00	0.00	6,636.04	968.96	101.84	0.00	0.00	0.00	0.00	
7,682.58	89.87	179.03	7,209.00	397.35	111.52	10.00	10.00	19.92	179.03	
14,005.63	89.87	179.03	7,223.00	-5,924.77	218.54	0.00	0.00	0.00	0.00	SWARTZ 1C-25HZ_T

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 1C-25HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4973.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4973.00usft (D Rig)
Site:	2N-65W-13 Swartz No2 Pad	North Reference:	True
Well:	SWARTZ 1C-25HZ	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	
SWARTZ 1C-25HZ_Drilling Window - 2N-R65W-Sec. 25_Section lines - 2N-R65W-Sec. 13_Section lines - 2N-R65W-Sec. 12_Section lines -										
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	6.00	300.00	0.33	0.03	-0.32	1.50	1.50	0.00	
400.00	2.25	6.00	399.96	2.93	0.31	-2.92	1.50	1.50	0.00	
500.00	3.75	6.00	499.82	8.13	0.85	-8.12	1.50	1.50	0.00	
600.00	5.25	6.00	599.51	15.94	1.67	-15.91	1.50	1.50	0.00	
700.00	6.75	6.00	698.96	26.33	2.77	-26.28	1.50	1.50	0.00	
800.00	8.25	6.00	798.10	39.31	4.13	-39.24	1.50	1.50	0.00	
900.00	9.75	6.00	896.87	54.87	5.77	-54.76	1.50	1.50	0.00	
1,000.00	11.25	6.00	995.19	72.99	7.67	-72.85	1.50	1.50	0.00	
1,100.00	12.75	6.00	1,093.00	93.67	9.85	-93.49	1.50	1.50	0.00	
1,200.00	14.25	6.00	1,190.24	116.89	12.29	-116.66	1.50	1.50	0.00	
1,300.00	15.75	6.00	1,286.83	142.62	14.99	-142.35	1.50	1.50	0.00	
1,388.80	17.08	6.00	1,372.00	167.58	17.61	-167.26	1.50	1.50	0.00	
Fox Hills										
1,400.00	17.25	6.00	1,382.71	170.87	17.96	-170.54	1.50	1.50	0.00	
1,500.00	18.75	6.00	1,477.81	201.60	21.19	-201.21	1.50	1.50	0.00	
1,583.33	20.00	6.00	1,556.42	229.09	24.08	-228.65	1.50	1.50	0.00	
End Nudge @ 1583.33ft										
1,600.00	20.00	6.00	1,572.08	234.76	24.67	-234.31	0.00	0.00	0.00	
1,700.00	20.00	6.00	1,666.05	268.78	28.25	-268.26	0.00	0.00	0.00	
1,800.00	20.00	6.00	1,760.02	302.79	31.82	-302.21	0.00	0.00	0.00	
1,842.55	20.00	6.00	1,800.00	317.27	33.35	-316.66	0.00	0.00	0.00	
9 5/8"										
1,900.00	20.00	6.00	1,853.99	336.81	35.40	-336.16	0.00	0.00	0.00	
2,000.00	20.00	6.00	1,947.96	370.82	38.98	-370.11	0.00	0.00	0.00	
2,100.00	20.00	6.00	2,041.93	404.84	42.55	-404.06	0.00	0.00	0.00	
2,200.00	20.00	6.00	2,135.90	438.85	46.13	-438.01	0.00	0.00	0.00	
2,300.00	20.00	6.00	2,229.87	472.87	49.70	-471.96	0.00	0.00	0.00	
2,400.00	20.00	6.00	2,323.84	506.88	53.28	-505.91	0.00	0.00	0.00	
2,500.00	20.00	6.00	2,417.81	540.90	56.85	-539.86	0.00	0.00	0.00	
2,600.00	20.00	6.00	2,511.77	574.91	60.43	-573.81	0.00	0.00	0.00	
2,700.00	20.00	6.00	2,605.74	608.93	64.00	-607.75	0.00	0.00	0.00	
2,800.00	20.00	6.00	2,699.71	642.94	67.58	-641.70	0.00	0.00	0.00	
2,900.00	20.00	6.00	2,793.68	676.95	71.15	-675.65	0.00	0.00	0.00	
3,000.00	20.00	6.00	2,887.65	710.97	74.73	-709.60	0.00	0.00	0.00	
3,100.00	20.00	6.00	2,981.62	744.98	78.30	-743.55	0.00	0.00	0.00	
3,200.00	20.00	6.00	3,075.59	779.00	81.88	-777.50	0.00	0.00	0.00	
3,253.33	20.00	6.00	3,125.70	797.14	83.78	-795.61	0.00	0.00	0.00	
Begin Drop @ 3253.33ft										
3,300.00	19.07	6.00	3,169.69	812.66	85.41	-811.10	2.00	-2.00	0.00	
3,400.00	17.07	6.00	3,264.75	843.50	88.66	-841.88	2.00	-2.00	0.00	
3,500.00	15.07	6.00	3,360.84	871.02	91.55	-869.35	2.00	-2.00	0.00	
3,600.00	13.07	6.00	3,457.84	895.19	94.09	-893.47	2.00	-2.00	0.00	
3,700.00	11.07	6.00	3,555.62	915.98	96.27	-914.22	2.00	-2.00	0.00	
3,800.00	9.07	6.00	3,654.08	933.36	98.10	-931.57	2.00	-2.00	0.00	
3,900.00	7.07	6.00	3,753.08	947.32	99.57	-945.50	2.00	-2.00	0.00	
4,000.00	5.07	6.00	3,852.52	957.83	100.67	-955.99	2.00	-2.00	0.00	
4,100.00	3.07	6.00	3,952.26	964.88	101.41	-963.03	2.00	-2.00	0.00	

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Planning Report

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4973.00usft (D Rig)
Site:	2N-65W-13 Swartz No2 Pad	North Reference:	True
Well:	SWARTZ 1C-25HZ	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	1.07	6.00	4,052.19	968.47	101.79	-966.61	2.00	-2.00	0.00
4,253.33	0.00	6.00	4,105.52	968.96	101.84	-967.10	2.00	-2.00	0.00
End Drop @ 4253.33ft									
4,300.00	0.00	0.00	4,152.19	968.96	101.84	-967.10	0.00	0.00	0.00
4,400.00	0.00	0.00	4,252.19	968.96	101.84	-967.10	0.00	0.00	0.00
4,500.00	0.00	0.00	4,352.19	968.96	101.84	-967.10	0.00	0.00	0.00
4,523.81	0.00	0.00	4,376.00	968.96	101.84	-967.10	0.00	0.00	0.00
Sussex									
4,600.00	0.00	0.00	4,452.19	968.96	101.84	-967.10	0.00	0.00	0.00
4,700.00	0.00	0.00	4,552.19	968.96	101.84	-967.10	0.00	0.00	0.00
4,800.00	0.00	0.00	4,652.19	968.96	101.84	-967.10	0.00	0.00	0.00
4,900.00	0.00	0.00	4,752.19	968.96	101.84	-967.10	0.00	0.00	0.00
5,000.00	0.00	0.00	4,852.19	968.96	101.84	-967.10	0.00	0.00	0.00
5,100.00	0.00	0.00	4,952.19	968.96	101.84	-967.10	0.00	0.00	0.00
5,200.00	0.00	0.00	5,052.19	968.96	101.84	-967.10	0.00	0.00	0.00
5,300.00	0.00	0.00	5,152.19	968.96	101.84	-967.10	0.00	0.00	0.00
5,400.00	0.00	0.00	5,252.19	968.96	101.84	-967.10	0.00	0.00	0.00
5,500.00	0.00	0.00	5,352.19	968.96	101.84	-967.10	0.00	0.00	0.00
5,600.00	0.00	0.00	5,452.19	968.96	101.84	-967.10	0.00	0.00	0.00
5,700.00	0.00	0.00	5,552.19	968.96	101.84	-967.10	0.00	0.00	0.00
5,800.00	0.00	0.00	5,652.19	968.96	101.84	-967.10	0.00	0.00	0.00
5,900.00	0.00	0.00	5,752.19	968.96	101.84	-967.10	0.00	0.00	0.00
6,000.00	0.00	0.00	5,852.19	968.96	101.84	-967.10	0.00	0.00	0.00
6,100.00	0.00	0.00	5,952.19	968.96	101.84	-967.10	0.00	0.00	0.00
6,200.00	0.00	0.00	6,052.19	968.96	101.84	-967.10	0.00	0.00	0.00
6,300.00	0.00	0.00	6,152.19	968.96	101.84	-967.10	0.00	0.00	0.00
6,400.00	0.00	0.00	6,252.19	968.96	101.84	-967.10	0.00	0.00	0.00
6,500.00	0.00	0.00	6,352.19	968.96	101.84	-967.10	0.00	0.00	0.00
6,600.00	0.00	0.00	6,452.19	968.96	101.84	-967.10	0.00	0.00	0.00
6,700.00	0.00	0.00	6,552.19	968.96	101.84	-967.10	0.00	0.00	0.00
6,783.85	0.00	0.00	6,636.04	968.96	101.84	-967.10	0.00	0.00	0.00
KOP @ 6783.85ft									
6,800.00	1.61	179.03	6,652.19	968.73	101.85	-966.87	10.00	10.00	0.00
6,900.00	11.61	179.03	6,751.40	957.23	102.04	-955.37	10.00	10.00	0.00
6,997.78	21.39	179.03	6,845.03	929.49	102.51	-927.62	10.00	10.00	0.00
Sharon Springs									
7,000.00	21.61	179.03	6,847.10	928.68	102.52	-926.81	10.00	10.00	0.00
7,052.59	26.87	179.03	6,895.03	907.10	102.89	-905.22	10.00	10.00	0.00
Niobrara Top									
7,100.00	31.61	179.03	6,936.39	883.94	103.28	-882.07	10.00	10.00	0.00
7,132.55	34.87	179.03	6,963.61	866.10	103.58	-864.22	10.00	10.00	0.00
Niobrara B Bench									
7,200.00	41.61	179.03	7,016.55	824.38	104.29	-822.50	10.00	10.00	0.00
DLS = 10°/100'									
7,226.83	44.30	179.03	7,036.19	806.10	104.60	-804.22	10.00	10.00	0.00
Niobrara C Bench									
7,300.00	51.61	179.03	7,085.16	751.81	105.52	-749.92	10.00	10.00	0.00
7,400.00	61.61	179.03	7,140.11	668.43	106.93	-666.52	10.00	10.00	0.00
7,471.76	68.79	179.03	7,170.19	603.34	108.03	-601.42	10.00	10.00	0.00
Fort Hays									
7,500.00	71.61	179.03	7,179.76	576.77	108.48	-574.86	10.00	10.00	0.00
7,556.11	77.23	179.03	7,194.82	522.76	109.40	-520.83	10.00	10.00	0.00
Codell									

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 1C-25HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4973.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4973.00usft (D Rig)
Site:	2N-65W-13 Swartz No2 Pad	North Reference:	True
Well:	SWARTZ 1C-25HZ	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)
7,600.00	81.61	179.03	7,202.88	479.63	110.13	-477.70	10.00	10.00	0.00
7,682.58	89.87	179.03	7,209.00	397.36	111.52	-395.41	10.00	10.00	0.00
End Build @ 7682.58ft - Heel: - Top of Production									
7,700.00	89.87	179.03	7,209.04	379.94	111.81	-377.99	0.00	0.00	0.00
7,800.00	89.87	179.03	7,209.26	279.96	113.51	-277.99	0.00	0.00	0.00
7,900.00	89.87	179.03	7,209.48	179.97	115.20	-177.99	0.00	0.00	0.00
8,000.00	89.87	179.03	7,209.70	79.99	116.89	-77.99	0.00	0.00	0.00
8,100.00	89.87	179.03	7,209.92	-20.00	118.58	22.00	0.00	0.00	0.00
8,200.00	89.87	179.03	7,210.15	-119.99	120.28	122.00	0.00	0.00	0.00
8,300.00	89.87	179.03	7,210.37	-219.97	121.97	222.00	0.00	0.00	0.00
8,400.00	89.87	179.03	7,210.59	-319.96	123.66	322.00	0.00	0.00	0.00
8,500.00	89.87	179.03	7,210.81	-419.94	125.35	422.00	0.00	0.00	0.00
8,600.00	89.87	179.03	7,211.03	-519.93	127.05	522.00	0.00	0.00	0.00
8,700.00	89.87	179.03	7,211.25	-619.91	128.74	622.00	0.00	0.00	0.00
8,800.00	89.87	179.03	7,211.47	-719.90	130.43	722.00	0.00	0.00	0.00
8,900.00	89.87	179.03	7,211.70	-819.88	132.12	822.00	0.00	0.00	0.00
9,000.00	89.87	179.03	7,211.92	-919.87	133.82	922.00	0.00	0.00	0.00
9,100.00	89.87	179.03	7,212.14	-1,019.85	135.51	1,022.00	0.00	0.00	0.00
9,200.00	89.87	179.03	7,212.36	-1,119.84	137.20	1,122.00	0.00	0.00	0.00
9,300.00	89.87	179.03	7,212.58	-1,219.83	138.89	1,222.00	0.00	0.00	0.00
9,400.00	89.87	179.03	7,212.80	-1,319.81	140.59	1,322.00	0.00	0.00	0.00
9,500.00	89.87	179.03	7,213.02	-1,419.80	142.28	1,422.00	0.00	0.00	0.00
9,600.00	89.87	179.03	7,213.25	-1,519.78	143.97	1,522.00	0.00	0.00	0.00
9,700.00	89.87	179.03	7,213.47	-1,619.77	145.66	1,622.00	0.00	0.00	0.00
9,800.00	89.87	179.03	7,213.69	-1,719.75	147.36	1,722.00	0.00	0.00	0.00
9,900.00	89.87	179.03	7,213.91	-1,819.74	149.05	1,822.00	0.00	0.00	0.00
10,000.00	89.87	179.03	7,214.13	-1,919.72	150.74	1,922.00	0.00	0.00	0.00
10,100.00	89.87	179.03	7,214.35	-2,019.71	152.43	2,022.00	0.00	0.00	0.00
10,200.00	89.87	179.03	7,214.57	-2,119.69	154.13	2,122.00	0.00	0.00	0.00
10,300.00	89.87	179.03	7,214.80	-2,219.68	155.82	2,222.00	0.00	0.00	0.00
10,400.00	89.87	179.03	7,215.02	-2,319.67	157.51	2,322.00	0.00	0.00	0.00
10,500.00	89.87	179.03	7,215.24	-2,419.65	159.20	2,422.00	0.00	0.00	0.00
10,600.00	89.87	179.03	7,215.46	-2,519.64	160.90	2,522.00	0.00	0.00	0.00
10,700.00	89.87	179.03	7,215.68	-2,619.62	162.59	2,622.00	0.00	0.00	0.00
10,800.00	89.87	179.03	7,215.90	-2,719.61	164.28	2,722.00	0.00	0.00	0.00
10,900.00	89.87	179.03	7,216.12	-2,819.59	165.98	2,822.00	0.00	0.00	0.00
11,000.00	89.87	179.03	7,216.35	-2,919.58	167.67	2,922.00	0.00	0.00	0.00
11,100.00	89.87	179.03	7,216.57	-3,019.56	169.36	3,022.00	0.00	0.00	0.00
11,200.00	89.87	179.03	7,216.79	-3,119.55	171.05	3,122.00	0.00	0.00	0.00
11,300.00	89.87	179.03	7,217.01	-3,219.53	172.75	3,222.00	0.00	0.00	0.00
11,400.00	89.87	179.03	7,217.23	-3,319.52	174.44	3,322.00	0.00	0.00	0.00
11,500.00	89.87	179.03	7,217.45	-3,419.50	176.13	3,422.00	0.00	0.00	0.00
11,600.00	89.87	179.03	7,217.67	-3,519.49	177.82	3,522.00	0.00	0.00	0.00
11,700.00	89.87	179.03	7,217.89	-3,619.48	179.52	3,622.00	0.00	0.00	0.00
11,800.00	89.87	179.03	7,218.12	-3,719.46	181.21	3,722.00	0.00	0.00	0.00
11,900.00	89.87	179.03	7,218.34	-3,819.45	182.90	3,822.00	0.00	0.00	0.00
12,000.00	89.87	179.03	7,218.56	-3,919.43	184.59	3,922.00	0.00	0.00	0.00
12,100.00	89.87	179.03	7,218.78	-4,019.42	186.29	4,022.00	0.00	0.00	0.00
12,200.00	89.87	179.03	7,219.00	-4,119.40	187.98	4,121.99	0.00	0.00	0.00
12,300.00	89.87	179.03	7,219.22	-4,219.39	189.67	4,221.99	0.00	0.00	0.00
12,400.00	89.87	179.03	7,219.44	-4,319.37	191.36	4,321.99	0.00	0.00	0.00
12,500.00	89.87	179.03	7,219.67	-4,419.36	193.06	4,421.99	0.00	0.00	0.00
12,600.00	89.87	179.03	7,219.89	-4,519.34	194.75	4,521.99	0.00	0.00	0.00

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 1C-25HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4973.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4973.00usft (D Rig)
Site:	2N-65W-13 Swartz No2 Pad	North Reference:	True
Well:	SWARTZ 1C-25HZ	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	89.87	179.03	7,220.11	-4,619.33	196.44	4,621.99	0.00	0.00	0.00
12,800.00	89.87	179.03	7,220.33	-4,719.32	198.13	4,721.99	0.00	0.00	0.00
12,900.00	89.87	179.03	7,220.55	-4,819.30	199.83	4,821.99	0.00	0.00	0.00
13,000.00	89.87	179.03	7,220.77	-4,919.29	201.52	4,921.99	0.00	0.00	0.00
13,100.00	89.87	179.03	7,220.99	-5,019.27	203.21	5,021.99	0.00	0.00	0.00
13,200.00	89.87	179.03	7,221.22	-5,119.26	204.90	5,121.99	0.00	0.00	0.00
13,300.00	89.87	179.03	7,221.44	-5,219.24	206.60	5,221.99	0.00	0.00	0.00
13,400.00	89.87	179.03	7,221.66	-5,319.23	208.29	5,321.99	0.00	0.00	0.00
13,500.00	89.87	179.03	7,221.88	-5,419.21	209.98	5,421.99	0.00	0.00	0.00
13,600.00	89.87	179.03	7,222.10	-5,519.20	211.67	5,521.99	0.00	0.00	0.00
13,700.00	89.87	179.03	7,222.32	-5,619.18	213.37	5,621.99	0.00	0.00	0.00
13,800.00	89.87	179.03	7,222.54	-5,719.17	215.06	5,721.99	0.00	0.00	0.00
13,900.00	89.87	179.03	7,222.77	-5,819.16	216.75	5,821.99	0.00	0.00	0.00
14,000.00	89.87	179.03	7,222.99	-5,919.14	218.44	5,921.99	0.00	0.00	0.00
14,005.63	89.87	179.03	7,223.00	-5,924.77	218.54	5,927.62	0.00	0.00	0.00
TD Well @ 14005.63ft - Toe: - SWARTZ 1C-25HZ_Toe									

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 1C-25HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4973.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4973.00usft (D Rig)
Site:	2N-65W-13 Swartz No2 Pad	North Reference:	True
Well:	SWARTZ 1C-25HZ	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 1C-25HZ_Drill	0.00	0.00	0.00	0.00	0.00	14,575,037.87	1,750,910.89	40.131977	-104.604688
- plan hits target center									
- Polygon									
Point 1			0.00	544.81	-352.28	14,575,581.11	1,750,556.19		
Point 2			0.00	540.42	30.58	14,575,578.42	1,750,939.06		
Point 3			0.00	-311.94	29.91	14,574,726.06	1,750,942.18		
Point 4			0.00	-1,625.97	41.03	14,573,412.10	1,750,959.15		
Point 5			0.00	-2,947.40	52.27	14,572,090.73	1,750,976.27		
Point 6			0.00	-4,254.28	63.25	14,570,783.91	1,750,993.06		
Point 7			0.00	-5,568.48	74.31	14,569,469.77	1,751,009.96		
Point 8			0.00	-6,430.19	81.20	14,568,608.10	1,751,020.68		
Point 9			0.00	-6,429.68	-328.40	14,568,606.79	1,750,611.09		
Point 10			0.00	-5,560.52	-331.85	14,569,475.93	1,750,603.77		
Point 11			0.00	-4,251.36	-336.57	14,570,785.05	1,750,593.23		
Point 12			0.00	-2,931.59	-343.21	14,572,104.78	1,750,580.72		
Point 13			0.00	-1,622.57	-348.52	14,573,413.76	1,750,569.59		
Point 14			0.00	-308.17	-353.85	14,574,728.13	1,750,558.41		
Point 15			0.00	544.81	-352.28	14,575,581.11	1,750,556.19		
2N-R65W-Sec. 25_Secti	0.00	0.00	0.00	40.12	-1,706.72	14,575,070.39	1,749,204.01	40.132087	-104.610794
- plan misses target center by 1707.19usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			0.00	-5,575.96	-3,064.67	14,569,480.86	1,746,164.17		
Point 2			0.00	-5,592.14	-413.46	14,569,476.47	1,748,815.43		
Point 3			0.00	-5,609.35	2,238.63	14,569,471.05	1,751,467.57		
Point 4			0.00	-8,247.40	2,259.94	14,566,833.13	1,751,500.61		
Point 5			0.00	-10,884.05	2,281.32	14,564,196.60	1,751,533.71		
Point 6			0.00	-10,912.19	-413.54	14,564,156.47	1,748,839.01		
Point 7			0.00	-11,002.15	-3,033.15	14,564,054.86	1,746,219.82		
Point 8			0.00	-8,271.55	-3,044.64	14,566,785.38	1,746,196.19		
2N-R65W-Sec. 13_Secti	0.00	0.00	0.00	40.12	-1,706.72	14,575,070.39	1,749,204.01	40.132087	-104.610794
- plan misses target center by 1707.19usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			0.00	4,980.35	-2,990.78	14,580,037.39	1,746,191.11		
Point 2			0.00	4,936.75	-397.15	14,580,005.33	1,748,784.91		
Point 3			0.00	4,893.27	2,196.04	14,579,973.38	1,751,378.27		
Point 4			0.00	2,269.18	2,195.68	14,577,349.32	1,751,389.58		
Point 5			0.00	-354.07	2,193.83	14,574,726.08	1,751,399.39		
Point 6			0.00	-330.09	-414.94	14,574,738.46	1,748,790.54		
Point 7			0.00	-306.12	-3,023.71	14,574,750.83	1,746,181.69		
Point 8			0.00	2,332.94	-3,010.80	14,577,389.92	1,746,182.87		
2N-R65W-Sec. 12_Secti	0.00	0.00	0.00	40.12	-1,706.72	14,575,070.39	1,749,204.01	40.132087	-104.610794
- plan misses target center by 1707.19usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			0.00	10,311.40	-2,932.44	14,585,368.65	1,746,225.74		
Point 2			0.00	10,213.49	-365.25	14,585,282.16	1,748,793.34		
Point 3			0.00	10,115.80	2,202.09	14,585,195.89	1,751,361.09		
Point 4			0.00	7,504.68	2,199.03	14,582,584.78	1,751,369.64		
Point 5			0.00	4,893.27	2,196.04	14,579,973.38	1,751,378.27		
Point 6			0.00	4,936.75	-397.15	14,580,005.33	1,748,784.91		
Point 7			0.00	4,980.35	-2,990.78	14,580,037.39	1,746,191.11		
Point 8			0.00	7,645.87	-2,961.54	14,582,703.02	1,746,208.50		
2N-R65W-Sec. 24_Secti	0.00	0.00	0.00	40.12	-1,706.72	14,575,070.39	1,749,204.01	40.132087	-104.610794
- plan misses target center by 1707.19usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			0.00	-306.12	-3,023.71	14,574,750.83	1,746,181.69		
Point 2			0.00	-330.09	-414.94	14,574,738.46	1,748,790.54		

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 1C-25HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4973.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4973.00usft (D Rig)
Site:	2N-65W-13 Swartz No2 Pad	North Reference:	True
Well:	SWARTZ 1C-25HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Point 3	0.00	-354.07	2,193.83	14,574,726.08	1,751,399.39			
Point 4	0.00	-2,981.13	2,216.36	14,572,099.15	1,751,433.61			
Point 5	0.00	-5,609.35	2,238.63	14,569,471.05	1,751,467.57			
Point 6	0.00	-5,592.14	-413.46	14,569,476.47	1,748,815.43			
Point 7	0.00	-5,575.96	-3,064.67	14,569,480.86	1,746,164.17			
Point 8	0.00	-2,941.37	-3,043.57	14,572,115.52	1,746,173.55			
SWARTZ 1C-25HZ_Toe	0.00	0.00	7,223.00	-5,924.77	218.54	14,569,114.13	1,751,155.78	40.115707 -104.603907
- plan hits target center								
- Point								

Casing Points								
Measured Depth (usft)	Vertical Depth (usft)	Name				Casing Diameter (")	Hole Diameter (")	
1,842.55	1,800.00	9 5/8"				9-5/8	13-1/2	
7,682.58	7,209.00	Top of Production				5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,388.80	1,372.00	Fox Hills		0.00		
4,523.81	4,376.00	Sussex		0.00		
6,997.78	6,845.03	Sharon Springs		0.00		
7,052.59	6,895.03	Niobrara Top		0.00		
7,132.55	6,963.61	Niobrara B Bench		0.00		
7,226.83	7,036.19	Niobrara C Bench		0.00		
7,471.76	7,170.19	Fort Hays		0.00		
7,556.11	7,194.82	Codell		0.00		
7,682.58	7,209.00	Heel:		0.00		
14,005.63	7,223.00	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	
1,583.33	1,556.42	229.09	24.08	End Nudge @ 1583.33ft	
3,253.33	3,125.70	797.14	83.78	Begin Drop @ 3253.33ft	
4,253.33	4,105.52	968.96	101.84	End Drop @ 4253.33ft	
6,783.85	6,636.04	968.96	101.84	KOP @ 6783.85ft	
7,200.00	7,016.55	824.38	104.29	DLS = 10°/100'	
7,682.58	7,209.00	397.36	111.52	End Build @ 7682.58ft	
14,005.63	7,223.00	-5,924.77	218.54	TD Well @ 14005.63ft	