

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
3N-67W-04 SWARTZ 2-4HZ PAD
SWARTZ 4-14HZ**

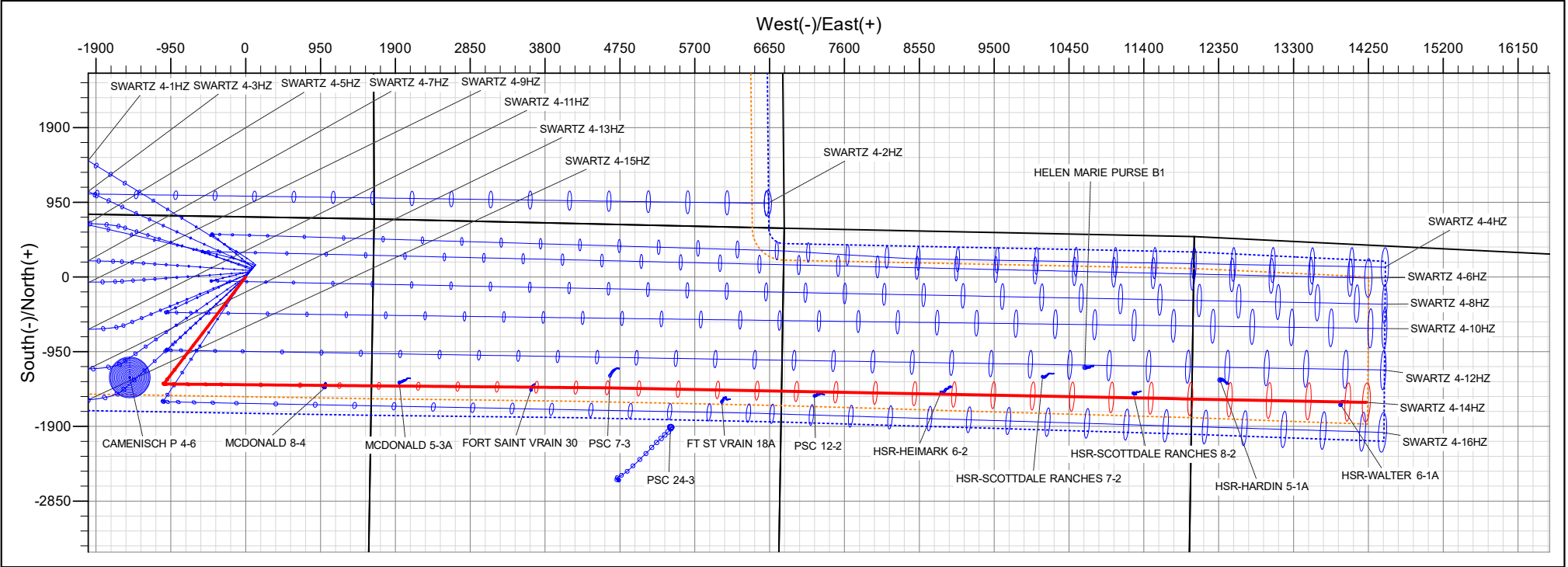
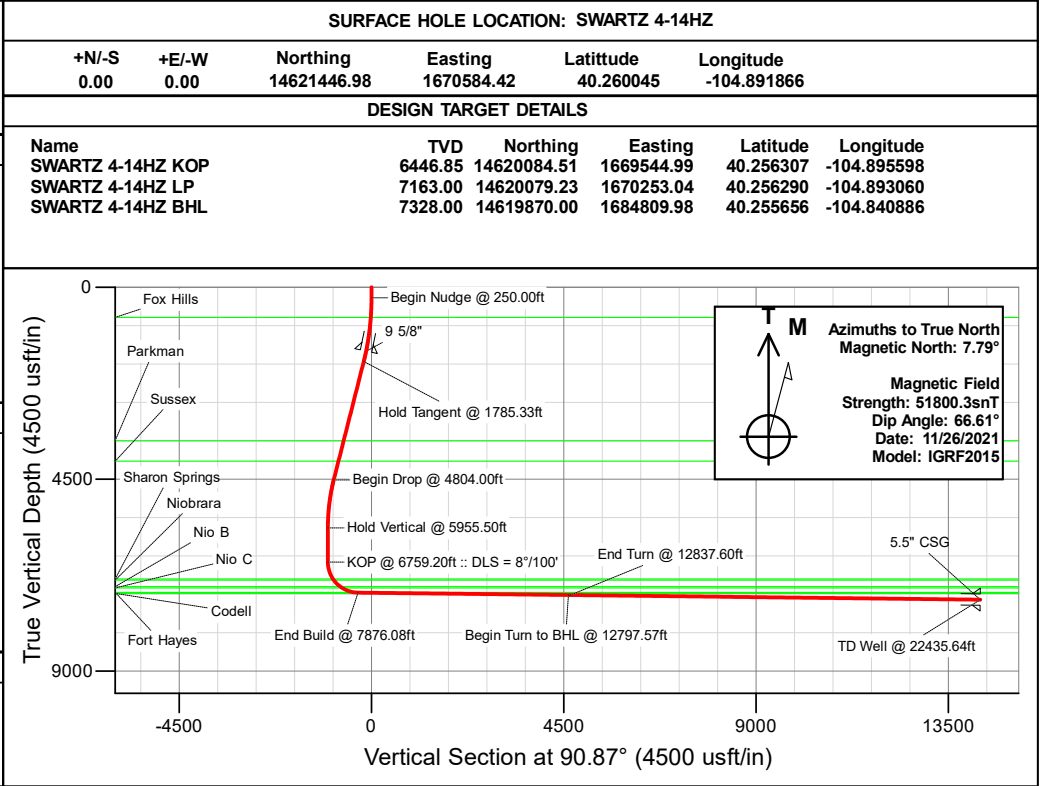
Plan A

Plan: Permit Rev-1

Standard Planning Report

15 December, 2021

Project: WELD-NAD83-UTMFT13N Site: 3N-67W-04 SWARTZ 2-4HZ PAD Well: SWARTZ 4-14HZ Wellbore: Plan A Design: Permit Rev-1										
SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	
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	1785.33	23.03	217.41	1744.32	-241.81	-184.95	1.50	217.41	-181.25	
4	4804.00	23.03	217.41	4522.40	-1179.84	-902.39	0.00	0.00	-884.37	
5	5955.50	0.00	0.00	5643.15	-1361.20	-1041.10	2.00	180.00	-1020.31	
6	6759.20	0.00	0.00	6446.85	-1361.20	-1041.10	0.00	0.00	-1020.31	
7	7876.08	89.35	90.50	7163.00	-1367.34	-333.05	8.00	90.50	-312.25	
8	12797.57	89.35	90.50	7218.81	-1410.00	4587.94	0.00	0.00	4608.82	
9	12837.60	89.35	91.10	7219.26	-1410.56	4627.96	1.50	89.94	4648.85	
10	22435.64	89.35	91.10	7328.00	-1594.33	14223.63	0.00	0.00	14246.20	
CASING DETAILS					FORMATION TOP DETAILS					
TVD	MD	Name	Size	TVDPath	MDPath	Formation				
1500.00	1523.46	9 5/8"	9-5/8	707.00	708.10	Fox Hills				
7328.00	22435.64	5.5" CSG	5-1/2	3598.00	3799.54	Parkman				
				4080.00	4323.28	Sussex				
				6841.00	7176.58	Sharon Springs				
				6871.00	7213.14	Niobrara				
				7023.00	7428.68	Nio B				
				7055.00	7485.68	Nio C				
				7157.00	7791.10	Fort Hayes				
				7178.00	9199.01	Codell				
FOOTAGE CALLOUTS										
SHL	LP							BHL		



Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-14HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4842.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4842.00usft (RIG)
Site:	3N-67W-04 SWARTZ 2-4HZ PAD	North Reference:	True
Well:	SWARTZ 4-14HZ	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-67W-04 SWARTZ 2-4HZ PAD			
Site Position:		Northing:	14,621,599.90 usft	Latitude:	40.260465
From:	Map	Easting:	1,670,705.29 usft	Longitude:	-104.891433
Position Uncertainty:		0.00 usft	Slot Radius:	13-3/16 "	

Well		SWARTZ 4-14HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,621,446.98 usft	Latitude:	40.260045
	+E/-W	0.00 usft	Easting:	1,670,584.42 usft	Longitude:	-104.891867
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	4,825.00 usft
Grid Convergence:		0.07 °				

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF202013	11/26/2021	7.86	66.50	51,820.01766535

Design	Permit Rev-1				
Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	90.87	

Plan Survey Tool Program	Date	12/10/2021			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	2,000.00	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD Fixed:v2:standard declination	
2	2,000.00	22,435.64	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:Rockies, crustal dec +	

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Wellbore:	Plan A		
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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	
1,785.33	23.03	217.41	1,744.32	-241.81	-184.95	1.50	1.50	0.00	217.41	
4,804.00	23.03	217.41	4,522.40	-1,179.84	-902.39	0.00	0.00	0.00	0.00	
5,955.50	0.00	0.00	5,643.15	-1,361.20	-1,041.10	2.00	-2.00	12.38	180.00	
6,759.20	0.00	0.00	6,446.85	-1,361.20	-1,041.10	0.00	0.00	0.00	0.00	
7,876.08	89.35	90.50	7,163.00	-1,367.34	-333.05	8.00	8.00	8.10	90.50	
12,797.57	89.35	90.50	7,218.81	-1,410.00	4,587.94	0.00	0.00	0.00	0.00	SWARTZ 4-14HZ_LaI
12,837.60	89.35	91.10	7,219.26	-1,410.56	4,627.96	1.50	0.00	1.50	89.94	
22,435.64	89.35	91.10	7,328.00	-1,594.33	14,223.63	0.00	0.00	0.00	0.00	SWARTZ 4-14HZ BHI

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Well:	SWARTZ 4-14HZ	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	217.41	300.00	-0.26	-0.20	-0.19	1.50	1.50	0.00
400.00	2.25	217.41	399.96	-2.34	-1.79	-1.75	1.50	1.50	0.00
500.00	3.75	217.41	499.82	-6.50	-4.97	-4.87	1.50	1.50	0.00
600.00	5.25	217.41	599.51	-12.73	-9.73	-9.54	1.50	1.50	0.00
700.00	6.75	217.41	698.96	-21.03	-16.08	-15.76	1.50	1.50	0.00
708.10	6.87	217.41	707.00	-21.79	-16.67	-16.34	1.50	1.50	0.00
Fox Hills									
800.00	8.25	217.41	798.10	-31.40	-24.01	-23.53	1.50	1.50	0.00
900.00	9.75	217.41	896.87	-43.82	-33.52	-32.85	1.50	1.50	0.00
1,000.00	11.25	217.41	995.19	-58.30	-44.59	-43.70	1.50	1.50	0.00
1,100.00	12.75	217.41	1,093.00	-74.81	-57.22	-56.08	1.50	1.50	0.00
1,200.00	14.25	217.41	1,190.24	-93.35	-71.40	-69.98	1.50	1.50	0.00
1,300.00	15.75	217.41	1,286.83	-113.91	-87.12	-85.38	1.50	1.50	0.00
1,400.00	17.25	217.41	1,382.71	-136.47	-104.38	-102.29	1.50	1.50	0.00
1,500.00	18.75	217.41	1,477.81	-161.02	-123.15	-120.69	1.50	1.50	0.00
1,523.46	19.10	217.41	1,500.00	-167.06	-127.77	-125.22	1.50	1.50	0.00
9 5/8"									
1,600.00	20.25	217.41	1,572.07	-187.53	-143.43	-140.57	1.50	1.50	0.00
1,700.00	21.75	217.41	1,665.43	-215.99	-165.20	-161.90	1.50	1.50	0.00
1,785.33	23.03	217.41	1,744.32	-241.81	-184.95	-181.25	1.50	1.50	0.00
Hold Tangent @ 1785.33ft									
1,800.00	23.03	217.41	1,757.82	-246.37	-188.43	-184.67	0.00	0.00	0.00
1,900.00	23.03	217.41	1,849.85	-277.44	-212.20	-207.96	0.00	0.00	0.00
2,000.00	23.03	217.41	1,941.88	-308.52	-235.97	-231.25	0.00	0.00	0.00
2,100.00	23.03	217.41	2,033.91	-339.59	-259.73	-254.55	0.00	0.00	0.00
2,200.00	23.03	217.41	2,125.94	-370.67	-283.50	-277.84	0.00	0.00	0.00
2,300.00	23.03	217.41	2,217.97	-401.74	-307.27	-301.13	0.00	0.00	0.00
2,400.00	23.03	217.41	2,310.00	-432.82	-331.03	-324.42	0.00	0.00	0.00
2,500.00	23.03	217.41	2,402.03	-463.89	-354.80	-347.71	0.00	0.00	0.00
2,600.00	23.03	217.41	2,494.06	-494.96	-378.57	-371.01	0.00	0.00	0.00
2,700.00	23.03	217.41	2,586.09	-526.04	-402.33	-394.30	0.00	0.00	0.00
2,800.00	23.03	217.41	2,678.12	-557.11	-426.10	-417.59	0.00	0.00	0.00
2,900.00	23.03	217.41	2,770.15	-588.19	-449.87	-440.88	0.00	0.00	0.00
3,000.00	23.03	217.41	2,862.18	-619.26	-473.63	-464.18	0.00	0.00	0.00
3,100.00	23.03	217.41	2,954.21	-650.34	-497.40	-487.47	0.00	0.00	0.00
3,200.00	23.03	217.41	3,046.24	-681.41	-521.17	-510.76	0.00	0.00	0.00
3,300.00	23.03	217.41	3,138.27	-712.49	-544.93	-534.05	0.00	0.00	0.00
3,400.00	23.03	217.41	3,230.30	-743.56	-568.70	-557.34	0.00	0.00	0.00
3,500.00	23.03	217.41	3,322.33	-774.63	-592.47	-580.64	0.00	0.00	0.00
3,600.00	23.03	217.41	3,414.36	-805.71	-616.23	-603.93	0.00	0.00	0.00
3,700.00	23.03	217.41	3,506.39	-836.78	-640.00	-627.22	0.00	0.00	0.00
3,799.54	23.03	217.41	3,598.00	-867.72	-663.66	-650.41	0.00	0.00	0.00
Parkman									
3,800.00	23.03	217.41	3,598.42	-867.86	-663.77	-650.51	0.00	0.00	0.00
3,900.00	23.03	217.41	3,690.45	-898.93	-687.53	-673.81	0.00	0.00	0.00
4,000.00	23.03	217.41	3,782.48	-930.01	-711.30	-697.10	0.00	0.00	0.00
4,100.00	23.03	217.41	3,874.51	-961.08	-735.07	-720.39	0.00	0.00	0.00
4,200.00	23.03	217.41	3,966.54	-992.16	-758.83	-743.68	0.00	0.00	0.00
4,300.00	23.03	217.41	4,058.57	-1,023.23	-782.60	-766.97	0.00	0.00	0.00

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Site:	3N-67W-04 SWARTZ 2-4HZ PAD	North Reference:	True
Well:	SWARTZ 4-14HZ	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)
4,323.28	23.03	217.41	4,080.00	-1,030.46	-788.13	-772.40	0.00	0.00	0.00
Sussex									
4,400.00	23.03	217.41	4,150.60	-1,054.30	-806.37	-790.27	0.00	0.00	0.00
4,500.00	23.03	217.41	4,242.63	-1,085.38	-830.13	-813.56	0.00	0.00	0.00
4,600.00	23.03	217.41	4,334.66	-1,116.45	-853.90	-836.85	0.00	0.00	0.00
4,700.00	23.03	217.41	4,426.69	-1,147.53	-877.67	-860.14	0.00	0.00	0.00
4,804.00	23.03	217.41	4,522.40	-1,179.84	-902.39	-884.37	0.00	0.00	0.00
Begin Drop @ 4804.00ft									
4,900.00	21.11	217.41	4,611.36	-1,208.49	-924.30	-905.84	2.00	-2.00	0.00
5,000.00	19.11	217.41	4,705.26	-1,235.80	-945.18	-926.31	2.00	-2.00	0.00
5,100.00	17.11	217.41	4,800.30	-1,260.49	-964.07	-944.82	2.00	-2.00	0.00
5,200.00	15.11	217.41	4,896.37	-1,282.53	-980.92	-961.34	2.00	-2.00	0.00
5,300.00	13.11	217.41	4,993.35	-1,301.90	-995.73	-975.85	2.00	-2.00	0.00
5,400.00	11.11	217.41	5,091.12	-1,318.56	-1,008.48	-988.34	2.00	-2.00	0.00
5,500.00	9.11	217.41	5,189.56	-1,332.50	-1,019.14	-998.79	2.00	-2.00	0.00
5,600.00	7.11	217.41	5,288.56	-1,343.71	-1,027.71	-1,007.19	2.00	-2.00	0.00
5,700.00	5.11	217.41	5,387.98	-1,352.16	-1,034.18	-1,013.53	2.00	-2.00	0.00
5,800.00	3.11	217.41	5,487.72	-1,357.85	-1,038.53	-1,017.79	2.00	-2.00	0.00
5,900.00	1.11	217.41	5,587.65	-1,360.78	-1,040.77	-1,019.99	2.00	-2.00	0.00
5,955.50	0.00	0.00	5,643.15	-1,361.20	-1,041.10	-1,020.31	2.00	-2.00	256.92
Hold Vertical @ 5955.50ft									
6,000.00	0.00	0.00	5,687.65	-1,361.20	-1,041.10	-1,020.31	0.00	0.00	0.00
6,100.00	0.00	0.00	5,787.65	-1,361.20	-1,041.10	-1,020.31	0.00	0.00	0.00
6,200.00	0.00	0.00	5,887.65	-1,361.20	-1,041.10	-1,020.31	0.00	0.00	0.00
6,300.00	0.00	0.00	5,987.65	-1,361.20	-1,041.10	-1,020.31	0.00	0.00	0.00
6,400.00	0.00	0.00	6,087.65	-1,361.20	-1,041.10	-1,020.31	0.00	0.00	0.00
6,500.00	0.00	0.00	6,187.65	-1,361.20	-1,041.10	-1,020.31	0.00	0.00	0.00
6,600.00	0.00	0.00	6,287.65	-1,361.20	-1,041.10	-1,020.31	0.00	0.00	0.00
6,700.00	0.00	0.00	6,387.65	-1,361.20	-1,041.10	-1,020.31	0.00	0.00	0.00
6,759.20	0.00	0.00	6,446.85	-1,361.20	-1,041.10	-1,020.31	0.00	0.00	0.00
KOP @ 6759.20ft :: DLS = 8"/100'									
6,800.00	3.26	90.50	6,487.62	-1,361.21	-1,039.93	-1,019.15	8.00	8.00	221.81
6,850.00	7.26	90.50	6,537.40	-1,361.25	-1,035.35	-1,014.56	8.00	8.00	0.00
6,900.00	11.26	90.50	6,586.74	-1,361.32	-1,027.30	-1,006.51	8.00	8.00	0.00
6,950.00	15.26	90.50	6,635.40	-1,361.42	-1,015.83	-995.04	8.00	8.00	0.00
7,000.00	19.26	90.50	6,683.13	-1,361.55	-1,001.00	-980.21	8.00	8.00	0.00
7,050.00	23.26	90.50	6,729.72	-1,361.71	-982.87	-962.08	8.00	8.00	0.00
7,100.00	27.26	90.50	6,774.93	-1,361.89	-961.53	-940.74	8.00	8.00	0.00
7,150.00	31.26	90.50	6,818.54	-1,362.11	-937.10	-916.31	8.00	8.00	0.00
7,176.58	33.39	90.50	6,841.00	-1,362.23	-922.88	-902.09	8.00	8.00	0.00
Sharon Springs									
7,200.00	35.26	90.50	6,860.34	-1,362.34	-909.68	-888.89	8.00	8.00	0.00
7,213.14	36.32	90.50	6,871.00	-1,362.41	-901.99	-881.20	8.00	8.00	0.00
Niobrara									
7,250.00	39.26	90.50	6,900.12	-1,362.61	-879.41	-858.62	8.00	8.00	0.00
7,300.00	43.26	90.50	6,937.70	-1,362.89	-846.44	-825.65	8.00	8.00	0.00
7,350.00	47.26	90.50	6,972.88	-1,363.20	-810.93	-790.14	8.00	8.00	0.00
7,400.00	51.26	90.50	7,005.51	-1,363.53	-773.06	-752.26	8.00	8.00	0.00
7,428.68	53.56	90.50	7,023.00	-1,363.72	-750.33	-729.54	8.00	8.00	0.00
Nio B									
7,450.00	55.26	90.50	7,035.41	-1,363.87	-733.00	-712.20	8.00	8.00	0.00
7,485.68	58.12	90.50	7,055.00	-1,364.13	-703.18	-682.39	8.00	8.00	0.00
Nio C									

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Well:	SWARTZ 4-14HZ	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)	
7,500.00	59.26	90.50	7,062.44	-1,364.24	-690.95	-670.15	8.00	8.00	0.00	
7,550.00	63.26	90.50	7,086.47	-1,364.62	-647.12	-626.32	8.00	8.00	0.00	
7,600.00	67.26	90.50	7,107.39	-1,365.01	-601.71	-580.92	8.00	8.00	0.00	
7,650.00	71.26	90.50	7,125.09	-1,365.42	-554.96	-534.17	8.00	8.00	0.00	
7,700.00	75.26	90.50	7,139.49	-1,365.83	-507.09	-486.30	8.00	8.00	0.00	
7,750.00	79.26	90.50	7,150.51	-1,366.26	-458.34	-437.54	8.00	8.00	0.00	
7,791.10	82.55	90.50	7,157.00	-1,366.61	-417.76	-396.97	8.00	8.00	0.00	
Fort Hayes										
7,800.00	83.26	90.50	7,158.10	-1,366.68	-408.93	-388.13	8.00	8.00	0.00	
7,850.00	87.26	90.50	7,162.23	-1,367.12	-359.11	-338.31	8.00	8.00	0.00	
7,876.08	89.35	90.50	7,163.00	-1,367.34	-333.05	-312.25	8.00	8.00	0.00	
End Build @ 7876.08ft										
7,900.00	89.35	90.50	7,163.27	-1,367.55	-309.13	-288.33	0.00	0.00	0.00	
8,000.00	89.35	90.50	7,164.40	-1,368.42	-209.14	-188.34	0.00	0.00	0.00	
8,100.00	89.35	90.50	7,165.54	-1,369.28	-109.15	-88.34	0.00	0.00	0.00	
8,200.00	89.35	90.50	7,166.67	-1,370.15	-9.16	11.65	0.00	0.00	0.00	
8,300.00	89.35	90.50	7,167.80	-1,371.02	90.83	111.64	0.00	0.00	0.00	
8,400.00	89.35	90.50	7,168.94	-1,371.88	190.82	211.63	0.00	0.00	0.00	
8,500.00	89.35	90.50	7,170.07	-1,372.75	290.81	311.62	0.00	0.00	0.00	
8,600.00	89.35	90.50	7,171.21	-1,373.62	390.80	411.61	0.00	0.00	0.00	
8,700.00	89.35	90.50	7,172.34	-1,374.48	490.79	511.60	0.00	0.00	0.00	
8,800.00	89.35	90.50	7,173.48	-1,375.35	590.78	611.60	0.00	0.00	0.00	
8,900.00	89.35	90.50	7,174.61	-1,376.22	690.77	711.59	0.00	0.00	0.00	
9,000.00	89.35	90.50	7,175.74	-1,377.08	790.76	811.58	0.00	0.00	0.00	
9,100.00	89.35	90.50	7,176.88	-1,377.95	890.75	911.57	0.00	0.00	0.00	
9,199.00	89.35	90.50	7,178.00	-1,378.81	989.74	1,010.57	0.00	0.00	0.00	
Codell										
9,200.00	89.35	90.50	7,178.01	-1,378.82	990.74	1,011.56	0.00	0.00	0.00	
9,300.00	89.35	90.50	7,179.15	-1,379.68	1,090.73	1,111.55	0.00	0.00	0.00	
9,400.00	89.35	90.50	7,180.28	-1,380.55	1,190.72	1,211.55	0.00	0.00	0.00	
9,500.00	89.35	90.50	7,181.41	-1,381.42	1,290.71	1,311.54	0.00	0.00	0.00	
9,600.00	89.35	90.50	7,182.55	-1,382.28	1,390.70	1,411.53	0.00	0.00	0.00	
9,700.00	89.35	90.50	7,183.68	-1,383.15	1,490.69	1,511.52	0.00	0.00	0.00	
9,800.00	89.35	90.50	7,184.82	-1,384.02	1,590.68	1,611.51	0.00	0.00	0.00	
9,900.00	89.35	90.50	7,185.95	-1,384.88	1,690.67	1,711.50	0.00	0.00	0.00	
10,000.00	89.35	90.50	7,187.08	-1,385.75	1,790.66	1,811.49	0.00	0.00	0.00	
10,100.00	89.35	90.50	7,188.22	-1,386.62	1,890.65	1,911.49	0.00	0.00	0.00	
10,200.00	89.35	90.50	7,189.35	-1,387.48	1,990.64	2,011.48	0.00	0.00	0.00	
10,300.00	89.35	90.50	7,190.49	-1,388.35	2,090.63	2,111.47	0.00	0.00	0.00	
10,400.00	89.35	90.50	7,191.62	-1,389.22	2,190.62	2,211.46	0.00	0.00	0.00	
10,500.00	89.35	90.50	7,192.75	-1,390.09	2,290.61	2,311.45	0.00	0.00	0.00	
10,600.00	89.35	90.50	7,193.89	-1,390.95	2,390.60	2,411.44	0.00	0.00	0.00	
10,700.00	89.35	90.50	7,195.02	-1,391.82	2,490.59	2,511.43	0.00	0.00	0.00	
10,800.00	89.35	90.50	7,196.16	-1,392.69	2,590.58	2,611.43	0.00	0.00	0.00	
10,900.00	89.35	90.50	7,197.29	-1,393.55	2,690.57	2,711.42	0.00	0.00	0.00	
11,000.00	89.35	90.50	7,198.42	-1,394.42	2,790.56	2,811.41	0.00	0.00	0.00	
11,100.00	89.35	90.50	7,199.56	-1,395.29	2,890.55	2,911.40	0.00	0.00	0.00	
11,200.00	89.35	90.50	7,200.69	-1,396.15	2,990.54	3,011.39	0.00	0.00	0.00	
11,300.00	89.35	90.50	7,201.83	-1,397.02	3,090.53	3,111.38	0.00	0.00	0.00	
11,400.00	89.35	90.50	7,202.96	-1,397.89	3,190.52	3,211.37	0.00	0.00	0.00	
11,500.00	89.35	90.50	7,204.09	-1,398.75	3,290.51	3,311.37	0.00	0.00	0.00	
11,600.00	89.35	90.50	7,205.23	-1,399.62	3,390.50	3,411.36	0.00	0.00	0.00	
11,700.00	89.35	90.50	7,206.36	-1,400.49	3,490.49	3,511.35	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-14HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4842.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4842.00usft (RIG)
Site:	3N-67W-04 SWARTZ 2-4HZ PAD	North Reference:	True
Well:	SWARTZ 4-14HZ	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)
11,800.00	89.35	90.50	7,207.50	-1,401.35	3,590.48	3,611.34	0.00	0.00	0.00
11,900.00	89.35	90.50	7,208.63	-1,402.22	3,690.47	3,711.33	0.00	0.00	0.00
12,000.00	89.35	90.50	7,209.77	-1,403.09	3,790.46	3,811.32	0.00	0.00	0.00
12,100.00	89.35	90.50	7,210.90	-1,403.95	3,890.45	3,911.31	0.00	0.00	0.00
12,200.00	89.35	90.50	7,212.03	-1,404.82	3,990.44	4,011.31	0.00	0.00	0.00
12,300.00	89.35	90.50	7,213.17	-1,405.69	4,090.42	4,111.30	0.00	0.00	0.00
12,400.00	89.35	90.50	7,214.30	-1,406.55	4,190.41	4,211.29	0.00	0.00	0.00
12,500.00	89.35	90.50	7,215.44	-1,407.42	4,290.40	4,311.28	0.00	0.00	0.00
12,600.00	89.35	90.50	7,216.57	-1,408.29	4,390.39	4,411.27	0.00	0.00	0.00
12,700.00	89.35	90.50	7,217.70	-1,409.15	4,490.38	4,511.26	0.00	0.00	0.00
12,797.57	89.35	90.50	7,218.81	-1,410.00	4,587.94	4,608.82	0.00	0.00	0.00
Begin Turn to BHL @ 12797.57ft									
12,800.00	89.35	90.53	7,218.84	-1,410.02	4,590.37	4,611.25	1.50	0.00	1.50
12,837.60	89.35	91.10	7,219.26	-1,410.56	4,627.96	4,648.85	1.50	0.00	1.50
End Turn @ 12837.60ft									
12,900.00	89.35	91.10	7,219.97	-1,411.75	4,690.35	4,711.25	0.00	0.00	0.00
13,000.00	89.35	91.10	7,221.10	-1,413.67	4,790.33	4,811.24	0.00	0.00	0.00
13,100.00	89.35	91.10	7,222.24	-1,415.58	4,890.30	4,911.23	0.00	0.00	0.00
13,200.00	89.35	91.10	7,223.37	-1,417.50	4,990.28	5,011.23	0.00	0.00	0.00
13,300.00	89.35	91.10	7,224.50	-1,419.41	5,090.25	5,111.22	0.00	0.00	0.00
13,400.00	89.35	91.10	7,225.64	-1,421.33	5,190.23	5,211.21	0.00	0.00	0.00
13,500.00	89.35	91.10	7,226.77	-1,423.24	5,290.20	5,311.20	0.00	0.00	0.00
13,600.00	89.35	91.10	7,227.90	-1,425.15	5,390.18	5,411.20	0.00	0.00	0.00
13,700.00	89.35	91.10	7,229.03	-1,427.07	5,490.15	5,511.19	0.00	0.00	0.00
13,800.00	89.35	91.10	7,230.17	-1,428.98	5,590.13	5,611.18	0.00	0.00	0.00
13,900.00	89.35	91.10	7,231.30	-1,430.90	5,690.10	5,711.18	0.00	0.00	0.00
14,000.00	89.35	91.10	7,232.43	-1,432.81	5,790.08	5,811.17	0.00	0.00	0.00
14,100.00	89.35	91.10	7,233.57	-1,434.73	5,890.06	5,911.16	0.00	0.00	0.00
14,200.00	89.35	91.10	7,234.70	-1,436.64	5,990.03	6,011.15	0.00	0.00	0.00
14,300.00	89.35	91.10	7,235.83	-1,438.56	6,090.01	6,111.15	0.00	0.00	0.00
14,400.00	89.35	91.10	7,236.96	-1,440.47	6,189.98	6,211.14	0.00	0.00	0.00
14,500.00	89.35	91.10	7,238.10	-1,442.39	6,289.96	6,311.13	0.00	0.00	0.00
14,600.00	89.35	91.10	7,239.23	-1,444.30	6,389.93	6,411.12	0.00	0.00	0.00
14,700.00	89.35	91.10	7,240.36	-1,446.22	6,489.91	6,511.12	0.00	0.00	0.00
14,800.00	89.35	91.10	7,241.50	-1,448.13	6,589.88	6,611.11	0.00	0.00	0.00
14,900.00	89.35	91.10	7,242.63	-1,450.05	6,689.86	6,711.10	0.00	0.00	0.00
15,000.00	89.35	91.10	7,243.76	-1,451.96	6,789.83	6,811.10	0.00	0.00	0.00
15,100.00	89.35	91.10	7,244.89	-1,453.87	6,889.81	6,911.09	0.00	0.00	0.00
15,200.00	89.35	91.10	7,246.03	-1,455.79	6,989.78	7,011.08	0.00	0.00	0.00
15,300.00	89.35	91.10	7,247.16	-1,457.70	7,089.76	7,111.07	0.00	0.00	0.00
15,400.00	89.35	91.10	7,248.29	-1,459.62	7,189.73	7,211.07	0.00	0.00	0.00
15,500.00	89.35	91.10	7,249.43	-1,461.53	7,289.71	7,311.06	0.00	0.00	0.00
15,600.00	89.35	91.10	7,250.56	-1,463.45	7,389.68	7,411.05	0.00	0.00	0.00
15,700.00	89.35	91.10	7,251.69	-1,465.36	7,489.66	7,511.05	0.00	0.00	0.00
15,800.00	89.35	91.10	7,252.82	-1,467.28	7,589.63	7,611.04	0.00	0.00	0.00
15,900.00	89.35	91.10	7,253.96	-1,469.19	7,689.61	7,711.03	0.00	0.00	0.00
16,000.00	89.35	91.10	7,255.09	-1,471.11	7,789.59	7,811.02	0.00	0.00	0.00
16,100.00	89.35	91.10	7,256.22	-1,473.02	7,889.56	7,911.02	0.00	0.00	0.00
16,200.00	89.35	91.10	7,257.36	-1,474.94	7,989.54	8,011.01	0.00	0.00	0.00
16,300.00	89.35	91.10	7,258.49	-1,476.85	8,089.51	8,111.00	0.00	0.00	0.00
16,400.00	89.35	91.10	7,259.62	-1,478.77	8,189.49	8,211.00	0.00	0.00	0.00
16,500.00	89.35	91.10	7,260.76	-1,480.68	8,289.46	8,310.99	0.00	0.00	0.00
16,600.00	89.35	91.10	7,261.89	-1,482.60	8,389.44	8,410.98	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-14HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4842.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4842.00usft (RIG)
Site:	3N-67W-04 SWARTZ 2-4HZ PAD	North Reference:	True
Well:	SWARTZ 4-14HZ	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)	
16,700.00	89.35	91.10	7,263.02	-1,484.51	8,489.41	8,510.97	0.00	0.00	0.00	
16,800.00	89.35	91.10	7,264.15	-1,486.42	8,589.39	8,610.97	0.00	0.00	0.00	
16,900.00	89.35	91.10	7,265.29	-1,488.34	8,689.36	8,710.96	0.00	0.00	0.00	
17,000.00	89.35	91.10	7,266.42	-1,490.25	8,789.34	8,810.95	0.00	0.00	0.00	
17,100.00	89.35	91.10	7,267.55	-1,492.17	8,889.31	8,910.94	0.00	0.00	0.00	
17,200.00	89.35	91.10	7,268.69	-1,494.08	8,989.29	9,010.94	0.00	0.00	0.00	
17,300.00	89.35	91.10	7,269.82	-1,496.00	9,089.26	9,110.93	0.00	0.00	0.00	
17,400.00	89.35	91.10	7,270.95	-1,497.91	9,189.24	9,210.92	0.00	0.00	0.00	
17,500.00	89.35	91.10	7,272.08	-1,499.83	9,289.21	9,310.92	0.00	0.00	0.00	
17,600.00	89.35	91.10	7,273.22	-1,501.74	9,389.19	9,410.91	0.00	0.00	0.00	
17,700.00	89.35	91.10	7,274.35	-1,503.66	9,489.16	9,510.90	0.00	0.00	0.00	
17,800.00	89.35	91.10	7,275.48	-1,505.57	9,589.14	9,610.89	0.00	0.00	0.00	
17,900.00	89.35	91.10	7,276.62	-1,507.49	9,689.11	9,710.89	0.00	0.00	0.00	
18,000.00	89.35	91.10	7,277.75	-1,509.40	9,789.09	9,810.88	0.00	0.00	0.00	
18,100.00	89.35	91.10	7,278.88	-1,511.32	9,889.07	9,910.87	0.00	0.00	0.00	
18,200.00	89.35	91.10	7,280.01	-1,513.23	9,989.04	10,010.87	0.00	0.00	0.00	
18,300.00	89.35	91.10	7,281.15	-1,515.15	10,089.02	10,110.86	0.00	0.00	0.00	
18,400.00	89.35	91.10	7,282.28	-1,517.06	10,188.99	10,210.85	0.00	0.00	0.00	
18,500.00	89.35	91.10	7,283.41	-1,518.97	10,288.97	10,310.84	0.00	0.00	0.00	
18,600.00	89.35	91.10	7,284.55	-1,520.89	10,388.94	10,410.84	0.00	0.00	0.00	
18,700.00	89.35	91.10	7,285.68	-1,522.80	10,488.92	10,510.83	0.00	0.00	0.00	
18,800.00	89.35	91.10	7,286.81	-1,524.72	10,588.89	10,610.82	0.00	0.00	0.00	
18,900.00	89.35	91.10	7,287.94	-1,526.63	10,688.87	10,710.82	0.00	0.00	0.00	
19,000.00	89.35	91.10	7,289.08	-1,528.55	10,788.84	10,810.81	0.00	0.00	0.00	
19,100.00	89.35	91.10	7,290.21	-1,530.46	10,888.82	10,910.80	0.00	0.00	0.00	
19,200.00	89.35	91.10	7,291.34	-1,532.38	10,988.79	11,010.79	0.00	0.00	0.00	
19,300.00	89.35	91.10	7,292.48	-1,534.29	11,088.77	11,110.79	0.00	0.00	0.00	
19,400.00	89.35	91.10	7,293.61	-1,536.21	11,188.74	11,210.78	0.00	0.00	0.00	
19,500.00	89.35	91.10	7,294.74	-1,538.12	11,288.72	11,310.77	0.00	0.00	0.00	
19,600.00	89.35	91.10	7,295.88	-1,540.04	11,388.69	11,410.76	0.00	0.00	0.00	
19,700.00	89.35	91.10	7,297.01	-1,541.95	11,488.67	11,510.76	0.00	0.00	0.00	
19,800.00	89.35	91.10	7,298.14	-1,543.87	11,588.64	11,610.75	0.00	0.00	0.00	
19,900.00	89.35	91.10	7,299.27	-1,545.78	11,688.62	11,710.74	0.00	0.00	0.00	
20,000.00	89.35	91.10	7,300.41	-1,547.70	11,788.60	11,810.74	0.00	0.00	0.00	
20,100.00	89.35	91.10	7,301.54	-1,549.61	11,888.57	11,910.73	0.00	0.00	0.00	
20,200.00	89.35	91.10	7,302.67	-1,551.52	11,988.55	12,010.72	0.00	0.00	0.00	
20,300.00	89.35	91.10	7,303.81	-1,553.44	12,088.52	12,110.71	0.00	0.00	0.00	
20,400.00	89.35	91.10	7,304.94	-1,555.35	12,188.50	12,210.71	0.00	0.00	0.00	
20,500.00	89.35	91.10	7,306.07	-1,557.27	12,288.47	12,310.70	0.00	0.00	0.00	
20,600.00	89.35	91.10	7,307.20	-1,559.18	12,388.45	12,410.69	0.00	0.00	0.00	
20,700.00	89.35	91.10	7,308.34	-1,561.10	12,488.42	12,510.69	0.00	0.00	0.00	
20,800.00	89.35	91.10	7,309.47	-1,563.01	12,588.40	12,610.68	0.00	0.00	0.00	
20,900.00	89.35	91.10	7,310.60	-1,564.93	12,688.37	12,710.67	0.00	0.00	0.00	
21,000.00	89.35	91.10	7,311.74	-1,566.84	12,788.35	12,810.66	0.00	0.00	0.00	
21,100.00	89.35	91.10	7,312.87	-1,568.76	12,888.32	12,910.66	0.00	0.00	0.00	
21,200.00	89.35	91.10	7,314.00	-1,570.67	12,988.30	13,010.65	0.00	0.00	0.00	
21,300.00	89.35	91.10	7,315.13	-1,572.59	13,088.27	13,110.64	0.00	0.00	0.00	
21,400.00	89.35	91.10	7,316.27	-1,574.50	13,188.25	13,210.64	0.00	0.00	0.00	
21,500.00	89.35	91.10	7,317.40	-1,576.42	13,288.22	13,310.63	0.00	0.00	0.00	
21,600.00	89.35	91.10	7,318.53	-1,578.33	13,388.20	13,410.62	0.00	0.00	0.00	
21,700.00	89.35	91.10	7,319.67	-1,580.24	13,488.17	13,510.61	0.00	0.00	0.00	
21,800.00	89.35	91.10	7,320.80	-1,582.16	13,588.15	13,610.61	0.00	0.00	0.00	
21,900.00	89.35	91.10	7,321.93	-1,584.07	13,688.12	13,710.60	0.00	0.00	0.00	
22,000.00	89.35	91.10	7,323.06	-1,585.99	13,788.10	13,810.59	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-14HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4842.00usft (RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4842.00usft (RIG)
Site:	3N-67W-04 SWARTZ 2-4HZ PAD	North Reference:	True
Well:	SWARTZ 4-14HZ	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)	
22,100.00	89.35	91.10	7,324.20	-1,587.90	13,888.08	13,910.58	0.00	0.00	0.00	
22,200.00	89.35	91.10	7,325.33	-1,589.82	13,988.05	14,010.58	0.00	0.00	0.00	
22,300.00	89.35	91.10	7,326.46	-1,591.73	14,088.03	14,110.57	0.00	0.00	0.00	
22,400.00	89.35	91.10	7,327.60	-1,593.65	14,188.00	14,210.56	0.00	0.00	0.00	
22,435.64	89.35	91.10	7,328.00	-1,594.33	14,223.63	14,246.20	0.00	0.00	0.00	
TD Well @ 22435.64ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,523.46	1,500.00	9 5/8"	9-5/8	13-1/2	
22,435.64	7,328.00	5.5" CSG	5-1/2	7-7/8	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
708.10	707.00	Fox Hills			
3,799.54	3,598.00	Parkman			
4,323.28	4,080.00	Sussex			
7,176.58	6,841.00	Sharon Springs			
7,213.14	6,871.00	Niobrara			
7,428.68	7,023.00	Nio B			
7,485.68	7,055.00	Nio C			
7,791.10	7,157.00	Fort Hayes			
9,199.00	7,178.00	Codell			

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	
1,785.33	1,744.32	-241.81	-184.95	Hold Tangent @ 1785.33ft	
4,804.00	4,522.40	-1,179.84	-902.39	Begin Drop @ 4804.00ft	
5,955.50	5,643.15	-1,361.20	-1,041.10	Hold Vertical @ 5955.50ft	
6,759.20	6,446.85	-1,361.20	-1,041.10	KOP @ 6759.20ft :: DLS = 8°/100'	
7,876.08	7,163.00	-1,367.34	-333.05	End Build @ 7876.08ft	
12,797.57	7,218.81	-1,410.00	4,587.94	Begin Turn to BHL @ 12797.57ft	
12,837.60	7,219.26	-1,410.56	4,627.96	End Turn @ 12837.60ft	
22,435.64	7,328.00	-1,594.33	14,223.63	TD Well @ 22435.64ft	