

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
3N-67W-04 SWARTZ 2-4HZ PAD
SWARTZ 4-16HZ**

Plan B

Plan: Permit Rev-1

Standard Planning Report

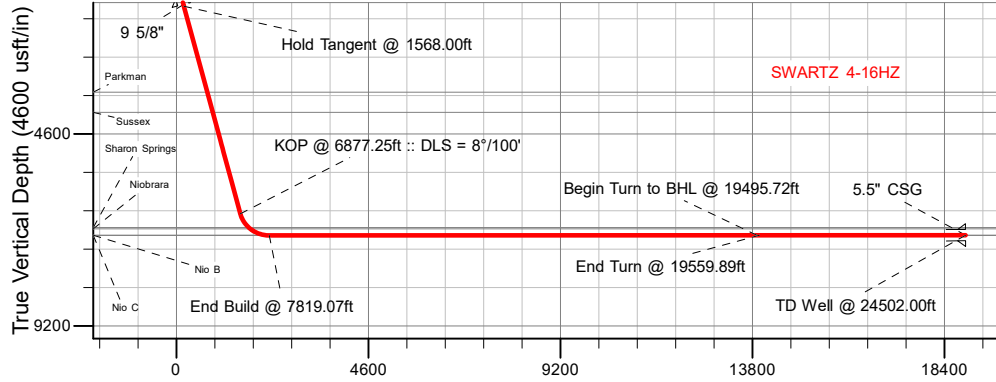
26 June, 2023

Project: WELD-NAD83-UTMFT13N
 Site: 3N-67W-04 SWARTZ 2-4HZ PAD
 Well: SWARTZ 4-16HZ
 Wellbore: Plan B
 Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Name	Size
1500.00	1526.50	9 5/8"	9-5/8
7022.00	24502.00	5.5" CSG	5-1/2



SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	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	
1568.00	20.52	227.36	1538.94	-164.17	-178.29	1.50	227.36	176.04	
6877.25	20.52	227.36	6511.32	-1424.85	-1547.34	0.00	0.00	1527.80	
7819.07	90.02	271.07	7029.00	-1545.81	-2242.84	8.00	45.58	2221.59	
19495.72	90.02	271.07	7024.12	-1327.49	-13917.45	0.00	0.00	13898.09	SWARTZ 4-16HZ INT TGT
19559.89	90.02	270.11	7024.09	-1326.82	-13981.61	1.50	-89.98	13962.25	
24502.00	90.02	270.11	7022.00	-1317.43	-18923.71	0.00	0.00	18904.02	SWARTZ 4-16HZ BHL

SHL
788' FNL
1638' FEL

LP
2370' FNL
1370' FWL

BHL
2370' FNL
279' FWL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	Northing	Easting	Latitude	Longitude
SWARTZ 4-16HZ SHL	0.00	14621423.45	1670565.82	40.259981	-104.891933
SWARTZ 4-16HZ LP	7029.00	14619874.91	1668324.87	40.255735	-104.899972
SWARTZ 4-16HZ BHL	7022.00	14620082.95	1651643.73	40.256343	-104.959760

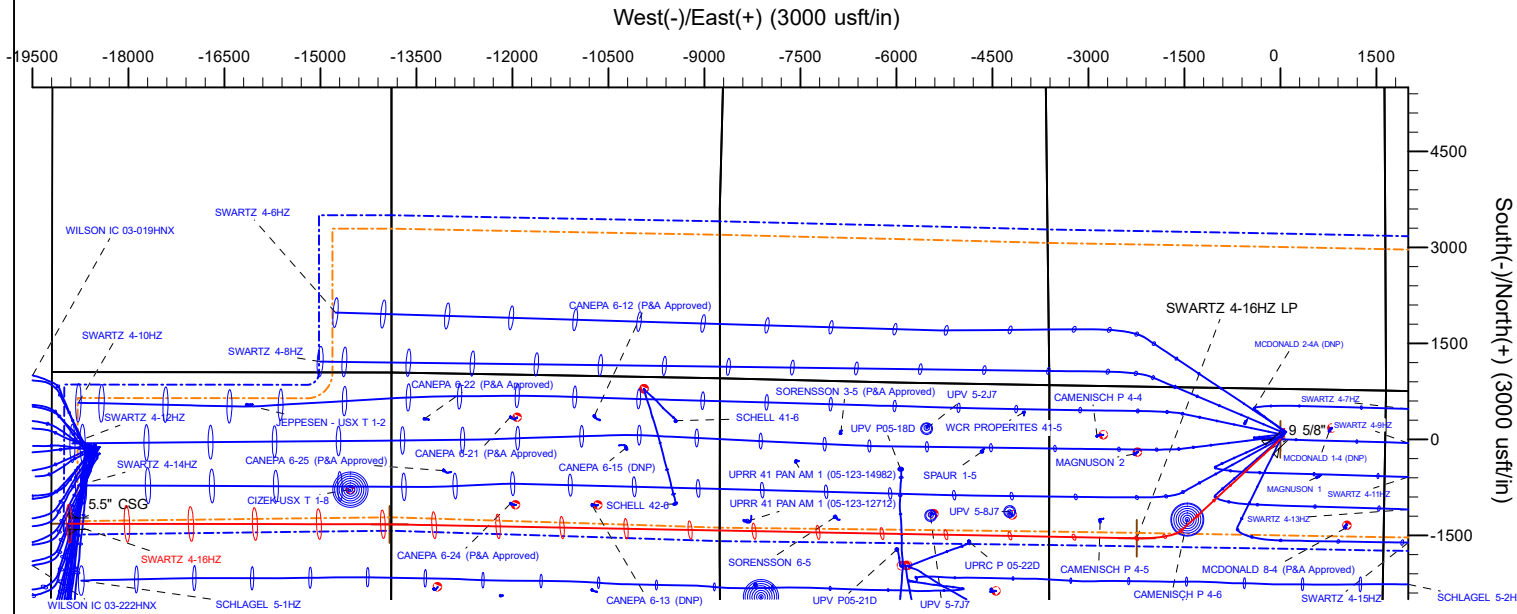
WELL DETAILS: SWARTZ 4-16HZ

GL = 4825'

RKB = 17' @ 4842.00usft (RIG)

Plan: Permit Rev-1 (SWARTZ 4-16HZ/Plan B)

Date: 6/27/2023



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
707.00	708.50	Fox Hills
3598.00	3766.56	Parkman
4080.00	4281.21	Sussex
6841.00	7278.66	Sharon Springs
6871.00	7325.59	Niobrara
7023.00	7724.48	Nio B
7029.00	7818.75	Nio C

Azimuths to True North
 Magnetic North: 7.71°
 Magnetic Field
 Strength: 51668.3nT
 Dip Angle: 66.45°
 Date: 5/5/2023
 Model: IGRF2020

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-16HZ
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 4-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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
From:	Map	Easting:	1,670,705.29 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	40.260465
		Longitude:	-104.891433

Well SWARTZ 4-16HZ			
Well Position	+N/-S	0.00 usft	Northing: 14,621,423.45 usft
	+E/-W	0.00 usft	Easting: 1,670,565.82 usft
Position Uncertainty		3.28 usft	Wellhead Elevation: usft
Grid Convergence:		0.07 °	Ground Level: 4,825.00 usft
			Latitude: 40.259981
			Longitude: -104.891933

Wellbore Plan B					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF202013	5/5/2023	7.71	66.45	51,668.34703203

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	270.78	

Plan Survey Tool Program		Date	6/26/2023		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	2,000.00	Permit Rev-1 (Plan B)	APC_ISCWSA REV 2 MWD Fixed:v2:standard declination	
2	2,000.00	24,502.00	Permit Rev-1 (Plan B)	APC_ISCWSA REV 2 MWD+I Fixed:v2:Rockies, crustal dec +	

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4842.00usft (RIG)
Site:	3N-67W-04 SWARTZ 2-4HZ PAD	North Reference:	True
Well:	SWARTZ 4-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
Design:	Permit Rev-1		

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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,568.00	20.52	227.36	1,538.94	-164.17	-178.29	1.50	1.50	0.00	227.36	
6,877.25	20.52	227.36	6,511.32	-1,424.85	-1,547.34	0.00	0.00	0.00	0.00	
7,819.07	90.02	271.07	7,029.00	-1,545.81	-2,242.84	8.00	7.38	4.64	45.58	
19,495.73	90.02	271.07	7,024.12	-1,327.49	-13,917.45	0.00	0.00	0.00	0.00	SWARTZ 4-16HZ INT
19,559.89	90.02	270.11	7,024.09	-1,326.82	-13,981.61	1.50	0.00	-1.50	-89.98	
24,502.00	90.02	270.11	7,022.00	-1,317.43	-18,923.71	0.00	0.00	0.00	0.00	SWARTZ 4-16HZ BHI

Planning Report

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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 4-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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	
Begin Nudge @ 200.00ft										
300.00	1.50	227.36	299.99	-0.89	-0.96	0.95	1.50	1.50	0.00	
400.00	3.00	227.36	399.91	-3.55	-3.85	3.80	1.50	1.50	0.00	
500.00	4.50	227.36	499.69	-7.98	-8.66	8.55	1.50	1.50	0.00	
600.00	6.00	227.36	599.27	-14.17	-15.39	15.20	1.50	1.50	0.00	
700.00	7.50	227.36	698.57	-22.14	-24.04	23.74	1.50	1.50	0.00	
708.50	7.63	227.36	707.00	-22.89	-24.86	24.55	1.50	1.50	0.00	
Fox Hills										
800.00	9.00	227.36	797.54	-31.86	-34.59	34.16	1.50	1.50	0.00	
900.00	10.50	227.36	896.09	-43.33	-47.05	46.46	1.50	1.50	0.00	
1,000.00	12.00	227.36	994.16	-56.54	-61.40	60.63	1.50	1.50	0.00	
1,100.00	13.50	227.36	1,091.70	-71.49	-77.64	76.66	1.50	1.50	0.00	
1,200.00	15.00	227.36	1,188.62	-88.16	-95.74	94.54	1.50	1.50	0.00	
1,300.00	16.50	227.36	1,284.86	-106.55	-115.71	114.25	1.50	1.50	0.00	
1,400.00	18.00	227.36	1,380.36	-126.64	-137.53	135.79	1.50	1.50	0.00	
1,500.00	19.50	227.36	1,475.05	-148.41	-161.17	159.14	1.50	1.50	0.00	
1,526.50	19.90	227.36	1,500.00	-154.46	-167.74	165.62	1.50	1.50	0.00	
9 5/8"										
1,568.00	20.52	227.36	1,538.94	-164.17	-178.29	176.04	1.50	1.50	0.00	
Hold Tangent @ 1568.00ft										
1,600.00	20.52	227.36	1,568.91	-171.77	-186.54	184.18	0.00	0.00	0.00	
1,700.00	20.52	227.36	1,662.57	-195.52	-212.32	209.64	0.00	0.00	0.00	
1,800.00	20.52	227.36	1,756.22	-219.26	-238.11	235.10	0.00	0.00	0.00	
1,900.00	20.52	227.36	1,849.88	-243.01	-263.90	260.56	0.00	0.00	0.00	
2,000.00	20.52	227.36	1,943.53	-266.75	-289.68	286.03	0.00	0.00	0.00	
2,100.00	20.52	227.36	2,037.19	-290.50	-315.47	311.49	0.00	0.00	0.00	
2,200.00	20.52	227.36	2,130.84	-314.24	-341.26	336.95	0.00	0.00	0.00	
2,300.00	20.52	227.36	2,224.50	-337.99	-367.04	362.41	0.00	0.00	0.00	
2,400.00	20.52	227.36	2,318.15	-361.73	-392.83	387.87	0.00	0.00	0.00	
2,500.00	20.52	227.36	2,411.81	-385.48	-418.61	413.33	0.00	0.00	0.00	
2,600.00	20.52	227.36	2,505.46	-409.22	-444.40	438.79	0.00	0.00	0.00	
2,700.00	20.52	227.36	2,599.12	-432.96	-470.19	464.25	0.00	0.00	0.00	
2,800.00	20.52	227.36	2,692.77	-456.71	-495.97	489.71	0.00	0.00	0.00	
2,900.00	20.52	227.36	2,786.43	-480.45	-521.76	515.17	0.00	0.00	0.00	
3,000.00	20.52	227.36	2,880.08	-504.20	-547.54	540.63	0.00	0.00	0.00	
3,100.00	20.52	227.36	2,973.74	-527.94	-573.33	566.09	0.00	0.00	0.00	
3,200.00	20.52	227.36	3,067.39	-551.69	-599.12	591.55	0.00	0.00	0.00	
3,300.00	20.52	227.36	3,161.05	-575.43	-624.90	617.01	0.00	0.00	0.00	
3,400.00	20.52	227.36	3,254.70	-599.18	-650.69	642.47	0.00	0.00	0.00	
3,500.00	20.52	227.36	3,348.36	-622.92	-676.48	667.93	0.00	0.00	0.00	
3,600.00	20.52	227.36	3,442.01	-646.67	-702.26	693.39	0.00	0.00	0.00	
3,700.00	20.52	227.36	3,535.67	-670.41	-728.05	718.85	0.00	0.00	0.00	
3,766.56	20.52	227.36	3,598.00	-686.22	-745.21	735.80	0.00	0.00	0.00	
Parkman										
3,800.00	20.52	227.36	3,629.32	-694.16	-753.83	744.31	0.00	0.00	0.00	
3,900.00	20.52	227.36	3,722.98	-717.90	-779.62	769.78	0.00	0.00	0.00	
4,000.00	20.52	227.36	3,816.63	-741.65	-805.41	795.24	0.00	0.00	0.00	
4,100.00	20.52	227.36	3,910.29	-765.39	-831.19	820.70	0.00	0.00	0.00	
4,200.00	20.52	227.36	4,003.94	-789.14	-856.98	846.16	0.00	0.00	0.00	
4,281.21	20.52	227.36	4,080.00	-808.42	-877.92	866.83	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-16HZ
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 4-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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	20.52	227.36	4,097.60	-812.88	-882.76	871.62	0.00	0.00	0.00
4,400.00	20.52	227.36	4,191.25	-836.63	-908.55	897.08	0.00	0.00	0.00
4,500.00	20.52	227.36	4,284.91	-860.37	-934.34	922.54	0.00	0.00	0.00
4,600.00	20.52	227.36	4,378.56	-884.12	-960.12	948.00	0.00	0.00	0.00
4,700.00	20.52	227.36	4,472.22	-907.86	-985.91	973.46	0.00	0.00	0.00
4,800.00	20.52	227.36	4,565.87	-931.61	-1,011.70	998.92	0.00	0.00	0.00
4,900.00	20.52	227.36	4,659.53	-955.35	-1,037.48	1,024.38	0.00	0.00	0.00
5,000.00	20.52	227.36	4,753.18	-979.10	-1,063.27	1,049.84	0.00	0.00	0.00
5,100.00	20.52	227.36	4,846.84	-1,002.84	-1,089.05	1,075.30	0.00	0.00	0.00
5,200.00	20.52	227.36	4,940.49	-1,026.59	-1,114.84	1,100.76	0.00	0.00	0.00
5,300.00	20.52	227.36	5,034.15	-1,050.33	-1,140.63	1,126.22	0.00	0.00	0.00
5,400.00	20.52	227.36	5,127.80	-1,074.08	-1,166.41	1,151.68	0.00	0.00	0.00
5,500.00	20.52	227.36	5,221.46	-1,097.82	-1,192.20	1,177.14	0.00	0.00	0.00
5,600.00	20.52	227.36	5,315.11	-1,121.56	-1,217.99	1,202.60	0.00	0.00	0.00
5,700.00	20.52	227.36	5,408.77	-1,145.31	-1,243.77	1,228.06	0.00	0.00	0.00
5,800.00	20.52	227.36	5,502.42	-1,169.05	-1,269.56	1,253.53	0.00	0.00	0.00
5,900.00	20.52	227.36	5,596.08	-1,192.80	-1,295.34	1,278.99	0.00	0.00	0.00
6,000.00	20.52	227.36	5,689.73	-1,216.54	-1,321.13	1,304.45	0.00	0.00	0.00
6,100.00	20.52	227.36	5,783.39	-1,240.29	-1,346.92	1,329.91	0.00	0.00	0.00
6,200.00	20.52	227.36	5,877.04	-1,264.03	-1,372.70	1,355.37	0.00	0.00	0.00
6,300.00	20.52	227.36	5,970.70	-1,287.78	-1,398.49	1,380.83	0.00	0.00	0.00
6,400.00	20.52	227.36	6,064.35	-1,311.52	-1,424.27	1,406.29	0.00	0.00	0.00
6,500.00	20.52	227.36	6,158.01	-1,335.27	-1,450.06	1,431.75	0.00	0.00	0.00
6,600.00	20.52	227.36	6,251.66	-1,359.01	-1,475.85	1,457.21	0.00	0.00	0.00
6,700.00	20.52	227.36	6,345.32	-1,382.76	-1,501.63	1,482.67	0.00	0.00	0.00
6,800.00	20.52	227.36	6,438.97	-1,406.50	-1,527.42	1,508.13	0.00	0.00	0.00
6,877.25	20.52	227.36	6,511.32	-1,424.85	-1,547.34	1,527.80	0.00	0.00	0.00
KOP @ 6877.25ft :: DLS = 8°/100'									
6,900.00	21.83	230.86	6,532.53	-1,430.22	-1,553.55	1,533.94	8.00	5.76	15.37
6,950.00	24.93	237.26	6,578.43	-1,441.79	-1,569.63	1,549.86	8.00	6.19	12.80
7,000.00	28.24	242.28	6,623.15	-1,453.00	-1,588.97	1,569.05	8.00	6.62	10.05
7,050.00	31.70	246.31	6,666.46	-1,463.78	-1,611.48	1,591.41	8.00	6.92	8.06
7,100.00	35.26	249.61	6,708.16	-1,474.09	-1,637.05	1,616.83	8.00	7.13	6.60
7,150.00	38.90	252.37	6,748.05	-1,483.88	-1,665.55	1,645.20	8.00	7.28	5.52
7,200.00	42.59	254.73	6,785.92	-1,493.09	-1,696.85	1,676.36	8.00	7.39	4.71
7,250.00	46.33	256.77	6,821.61	-1,501.69	-1,730.78	1,710.18	8.00	7.47	4.09
7,278.66	48.48	257.83	6,841.00	-1,506.33	-1,751.36	1,730.69	8.00	7.52	3.70
Sharon Springs									
7,300.00	50.09	258.57	6,854.92	-1,509.63	-1,767.20	1,746.48	8.00	7.55	3.49
7,325.59	52.03	259.42	6,871.00	-1,513.43	-1,786.73	1,765.96	8.00	7.57	3.31
Niobrara									
7,350.00	53.89	260.19	6,885.71	-1,516.87	-1,805.91	1,785.10	8.00	7.60	3.14
7,400.00	57.70	261.66	6,913.81	-1,523.39	-1,846.74	1,825.83	8.00	7.62	2.93
7,450.00	61.53	263.00	6,939.10	-1,529.13	-1,889.47	1,868.48	8.00	7.66	2.69
7,500.00	65.37	264.25	6,961.45	-1,534.09	-1,933.91	1,912.85	8.00	7.68	2.50
7,550.00	69.22	265.43	6,980.75	-1,538.22	-1,979.84	1,958.72	8.00	7.70	2.36
7,600.00	73.07	266.55	6,996.90	-1,541.53	-2,027.03	2,005.86	8.00	7.71	2.24
7,650.00	76.94	267.63	7,009.84	-1,543.97	-2,075.26	2,054.05	8.00	7.73	2.15
7,700.00	80.80	268.67	7,019.49	-1,545.56	-2,124.28	2,103.05	8.00	7.74	2.08
7,724.48	82.70	269.17	7,023.00	-1,546.02	-2,148.50	2,127.26	8.00	7.74	2.05
Nio B									
7,750.00	84.67	269.68	7,025.81	-1,546.27	-2,173.87	2,152.62	8.00	7.74	2.03

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-16HZ
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 4-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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)	
7,800.00	88.55	270.69	7,028.76	-1,546.11	-2,223.77	2,202.52	8.00	7.74	2.01	
7,818.75	90.02	271.07	7,029.00	-1,545.82	-2,242.51	2,221.26	8.14	7.88	2.04	
Nio C										
7,819.07	90.02	271.07	7,029.00	-1,545.81	-2,242.84	2,221.59	0.00	0.00	0.00	
End Build @ 7819.07ft										
7,900.00	90.02	271.07	7,028.97	-1,544.30	-2,323.75	2,302.51	0.00	0.00	0.00	
8,000.00	90.02	271.07	7,028.92	-1,542.43	-2,423.73	2,402.51	0.00	0.00	0.00	
8,100.00	90.02	271.07	7,028.88	-1,540.56	-2,523.72	2,502.51	0.00	0.00	0.00	
8,200.00	90.02	271.07	7,028.84	-1,538.69	-2,623.70	2,602.51	0.00	0.00	0.00	
8,300.00	90.02	271.07	7,028.80	-1,536.82	-2,723.68	2,702.51	0.00	0.00	0.00	
8,400.00	90.02	271.07	7,028.76	-1,534.95	-2,823.66	2,802.51	0.00	0.00	0.00	
8,500.00	90.02	271.07	7,028.72	-1,533.08	-2,923.65	2,902.51	0.00	0.00	0.00	
8,600.00	90.02	271.07	7,028.67	-1,531.21	-3,023.63	3,002.50	0.00	0.00	0.00	
8,700.00	90.02	271.07	7,028.63	-1,529.34	-3,123.61	3,102.50	0.00	0.00	0.00	
8,800.00	90.02	271.07	7,028.59	-1,527.47	-3,223.59	3,202.50	0.00	0.00	0.00	
8,900.00	90.02	271.07	7,028.55	-1,525.60	-3,323.58	3,302.50	0.00	0.00	0.00	
9,000.00	90.02	271.07	7,028.51	-1,523.73	-3,423.56	3,402.50	0.00	0.00	0.00	
9,100.00	90.02	271.07	7,028.46	-1,521.86	-3,523.54	3,502.50	0.00	0.00	0.00	
9,200.00	90.02	271.07	7,028.42	-1,519.99	-3,623.52	3,602.50	0.00	0.00	0.00	
9,300.00	90.02	271.07	7,028.38	-1,518.12	-3,723.51	3,702.50	0.00	0.00	0.00	
9,400.00	90.02	271.07	7,028.34	-1,516.25	-3,823.49	3,802.49	0.00	0.00	0.00	
9,500.00	90.02	271.07	7,028.30	-1,514.38	-3,923.47	3,902.49	0.00	0.00	0.00	
9,600.00	90.02	271.07	7,028.26	-1,512.51	-4,023.45	4,002.49	0.00	0.00	0.00	
9,700.00	90.02	271.07	7,028.21	-1,510.65	-4,123.44	4,102.49	0.00	0.00	0.00	
9,800.00	90.02	271.07	7,028.17	-1,508.78	-4,223.42	4,202.49	0.00	0.00	0.00	
9,900.00	90.02	271.07	7,028.13	-1,506.91	-4,323.40	4,302.49	0.00	0.00	0.00	
10,000.00	90.02	271.07	7,028.09	-1,505.04	-4,423.38	4,402.49	0.00	0.00	0.00	
10,100.00	90.02	271.07	7,028.05	-1,503.17	-4,523.37	4,502.49	0.00	0.00	0.00	
10,200.00	90.02	271.07	7,028.00	-1,501.30	-4,623.35	4,602.48	0.00	0.00	0.00	
10,300.00	90.02	271.07	7,027.96	-1,499.43	-4,723.33	4,702.48	0.00	0.00	0.00	
10,400.00	90.02	271.07	7,027.92	-1,497.56	-4,823.31	4,802.48	0.00	0.00	0.00	
10,500.00	90.02	271.07	7,027.88	-1,495.69	-4,923.30	4,902.48	0.00	0.00	0.00	
10,600.00	90.02	271.07	7,027.84	-1,493.82	-5,023.28	5,002.48	0.00	0.00	0.00	
10,700.00	90.02	271.07	7,027.80	-1,491.95	-5,123.26	5,102.48	0.00	0.00	0.00	
10,800.00	90.02	271.07	7,027.75	-1,490.08	-5,223.24	5,202.48	0.00	0.00	0.00	
10,900.00	90.02	271.07	7,027.71	-1,488.21	-5,323.23	5,302.47	0.00	0.00	0.00	
11,000.00	90.02	271.07	7,027.67	-1,486.34	-5,423.21	5,402.47	0.00	0.00	0.00	
11,100.00	90.02	271.07	7,027.63	-1,484.47	-5,523.19	5,502.47	0.00	0.00	0.00	
11,200.00	90.02	271.07	7,027.59	-1,482.60	-5,623.17	5,602.47	0.00	0.00	0.00	
11,300.00	90.02	271.07	7,027.55	-1,480.73	-5,723.16	5,702.47	0.00	0.00	0.00	
11,400.00	90.02	271.07	7,027.50	-1,478.86	-5,823.14	5,802.47	0.00	0.00	0.00	
11,500.00	90.02	271.07	7,027.46	-1,476.99	-5,923.12	5,902.47	0.00	0.00	0.00	
11,600.00	90.02	271.07	7,027.42	-1,475.12	-6,023.10	6,002.47	0.00	0.00	0.00	
11,700.00	90.02	271.07	7,027.38	-1,473.25	-6,123.09	6,102.46	0.00	0.00	0.00	
11,800.00	90.02	271.07	7,027.34	-1,471.38	-6,223.07	6,202.46	0.00	0.00	0.00	
11,900.00	90.02	271.07	7,027.29	-1,469.51	-6,323.05	6,302.46	0.00	0.00	0.00	
12,000.00	90.02	271.07	7,027.25	-1,467.64	-6,423.03	6,402.46	0.00	0.00	0.00	
12,100.00	90.02	271.07	7,027.21	-1,465.77	-6,523.02	6,502.46	0.00	0.00	0.00	
12,200.00	90.02	271.07	7,027.17	-1,463.90	-6,623.00	6,602.46	0.00	0.00	0.00	
12,300.00	90.02	271.07	7,027.13	-1,462.03	-6,722.98	6,702.46	0.00	0.00	0.00	
12,400.00	90.02	271.07	7,027.09	-1,460.16	-6,822.96	6,802.46	0.00	0.00	0.00	
12,500.00	90.02	271.07	7,027.04	-1,458.29	-6,922.95	6,902.45	0.00	0.00	0.00	
12,600.00	90.02	271.07	7,027.00	-1,456.42	-7,022.93	7,002.45	0.00	0.00	0.00	
12,700.00	90.02	271.07	7,026.96	-1,454.55	-7,122.91	7,102.45	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-16HZ
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 4-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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)	
12,800.00	90.02	271.07	7,026.92	-1,452.68	-7,222.89	7,202.45	0.00	0.00	0.00	
12,900.00	90.02	271.07	7,026.88	-1,450.81	-7,322.88	7,302.45	0.00	0.00	0.00	
13,000.00	90.02	271.07	7,026.83	-1,448.94	-7,422.86	7,402.45	0.00	0.00	0.00	
13,100.00	90.02	271.07	7,026.79	-1,447.07	-7,522.84	7,502.45	0.00	0.00	0.00	
13,200.00	90.02	271.07	7,026.75	-1,445.20	-7,622.82	7,602.44	0.00	0.00	0.00	
13,300.00	90.02	271.07	7,026.71	-1,443.33	-7,722.81	7,702.44	0.00	0.00	0.00	
13,400.00	90.02	271.07	7,026.67	-1,441.46	-7,822.79	7,802.44	0.00	0.00	0.00	
13,500.00	90.02	271.07	7,026.63	-1,439.59	-7,922.77	7,902.44	0.00	0.00	0.00	
13,600.00	90.02	271.07	7,026.58	-1,437.72	-8,022.76	8,002.44	0.00	0.00	0.00	
13,700.00	90.02	271.07	7,026.54	-1,435.85	-8,122.74	8,102.44	0.00	0.00	0.00	
13,800.00	90.02	271.07	7,026.50	-1,433.98	-8,222.72	8,202.44	0.00	0.00	0.00	
13,900.00	90.02	271.07	7,026.46	-1,432.11	-8,322.70	8,302.44	0.00	0.00	0.00	
14,000.00	90.02	271.07	7,026.42	-1,430.24	-8,422.69	8,402.43	0.00	0.00	0.00	
14,100.00	90.02	271.07	7,026.38	-1,428.37	-8,522.67	8,502.43	0.00	0.00	0.00	
14,200.00	90.02	271.07	7,026.33	-1,426.50	-8,622.65	8,602.43	0.00	0.00	0.00	
14,300.00	90.02	271.07	7,026.29	-1,424.63	-8,722.63	8,702.43	0.00	0.00	0.00	
14,400.00	90.02	271.07	7,026.25	-1,422.77	-8,822.62	8,802.43	0.00	0.00	0.00	
14,500.00	90.02	271.07	7,026.21	-1,420.90	-8,922.60	8,902.43	0.00	0.00	0.00	
14,600.00	90.02	271.07	7,026.17	-1,419.03	-9,022.58	9,002.43	0.00	0.00	0.00	
14,700.00	90.02	271.07	7,026.12	-1,417.16	-9,122.56	9,102.43	0.00	0.00	0.00	
14,800.00	90.02	271.07	7,026.08	-1,415.29	-9,222.55	9,202.42	0.00	0.00	0.00	
14,900.00	90.02	271.07	7,026.04	-1,413.42	-9,322.53	9,302.42	0.00	0.00	0.00	
15,000.00	90.02	271.07	7,026.00	-1,411.55	-9,422.51	9,402.42	0.00	0.00	0.00	
15,100.00	90.02	271.07	7,025.96	-1,409.68	-9,522.49	9,502.42	0.00	0.00	0.00	
15,200.00	90.02	271.07	7,025.92	-1,407.81	-9,622.48	9,602.42	0.00	0.00	0.00	
15,300.00	90.02	271.07	7,025.87	-1,405.94	-9,722.46	9,702.42	0.00	0.00	0.00	
15,400.00	90.02	271.07	7,025.83	-1,404.07	-9,822.44	9,802.42	0.00	0.00	0.00	
15,500.00	90.02	271.07	7,025.79	-1,402.20	-9,922.42	9,902.41	0.00	0.00	0.00	
15,600.00	90.02	271.07	7,025.75	-1,400.33	-10,022.41	10,002.41	0.00	0.00	0.00	
15,700.00	90.02	271.07	7,025.71	-1,398.46	-10,122.39	10,102.41	0.00	0.00	0.00	
15,800.00	90.02	271.07	7,025.66	-1,396.59	-10,222.37	10,202.41	0.00	0.00	0.00	
15,900.00	90.02	271.07	7,025.62	-1,394.72	-10,322.35	10,302.41	0.00	0.00	0.00	
16,000.00	90.02	271.07	7,025.58	-1,392.85	-10,422.34	10,402.41	0.00	0.00	0.00	
16,100.00	90.02	271.07	7,025.54	-1,390.98	-10,522.32	10,502.41	0.00	0.00	0.00	
16,200.00	90.02	271.07	7,025.50	-1,389.11	-10,622.30	10,602.41	0.00	0.00	0.00	
16,300.00	90.02	271.07	7,025.46	-1,387.24	-10,722.28	10,702.40	0.00	0.00	0.00	
16,400.00	90.02	271.07	7,025.41	-1,385.37	-10,822.27	10,802.40	0.00	0.00	0.00	
16,500.00	90.02	271.07	7,025.37	-1,383.50	-10,922.25	10,902.40	0.00	0.00	0.00	
16,600.00	90.02	271.07	7,025.33	-1,381.63	-11,022.23	11,002.40	0.00	0.00	0.00	
16,700.00	90.02	271.07	7,025.29	-1,379.76	-11,122.21	11,102.40	0.00	0.00	0.00	
16,800.00	90.02	271.07	7,025.25	-1,377.89	-11,222.20	11,202.40	0.00	0.00	0.00	
16,900.00	90.02	271.07	7,025.20	-1,376.02	-11,322.18	11,302.40	0.00	0.00	0.00	
17,000.00	90.02	271.07	7,025.16	-1,374.15	-11,422.16	11,402.40	0.00	0.00	0.00	
17,100.00	90.02	271.07	7,025.12	-1,372.28	-11,522.14	11,502.39	0.00	0.00	0.00	
17,200.00	90.02	271.07	7,025.08	-1,370.41	-11,622.13	11,602.39	0.00	0.00	0.00	
17,300.00	90.02	271.07	7,025.04	-1,368.54	-11,722.11	11,702.39	0.00	0.00	0.00	
17,400.00	90.02	271.07	7,025.00	-1,366.67	-11,822.09	11,802.39	0.00	0.00	0.00	
17,500.00	90.02	271.07	7,024.95	-1,364.80	-11,922.07	11,902.39	0.00	0.00	0.00	
17,600.00	90.02	271.07	7,024.91	-1,362.93	-12,022.06	12,002.39	0.00	0.00	0.00	
17,700.00	90.02	271.07	7,024.87	-1,361.06	-12,122.04	12,102.39	0.00	0.00	0.00	
17,800.00	90.02	271.07	7,024.83	-1,359.19	-12,222.02	12,202.39	0.00	0.00	0.00	
17,900.00	90.02	271.07	7,024.79	-1,357.32	-12,322.00	12,302.38	0.00	0.00	0.00	
18,000.00	90.02	271.07	7,024.75	-1,355.45	-12,421.99	12,402.38	0.00	0.00	0.00	
18,100.00	90.02	271.07	7,024.70	-1,353.58	-12,521.97	12,502.38	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-16HZ
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 4-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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)	
18,200.00	90.02	271.07	7,024.66	-1,351.71	-12,621.95	12,602.38	0.00	0.00	0.00	
18,300.00	90.02	271.07	7,024.62	-1,349.84	-12,721.93	12,702.38	0.00	0.00	0.00	
18,400.00	90.02	271.07	7,024.58	-1,347.97	-12,821.92	12,802.38	0.00	0.00	0.00	
18,500.00	90.02	271.07	7,024.54	-1,346.10	-12,921.90	12,902.38	0.00	0.00	0.00	
18,600.00	90.02	271.07	7,024.49	-1,344.23	-13,021.88	13,002.37	0.00	0.00	0.00	
18,700.00	90.02	271.07	7,024.45	-1,342.36	-13,121.86	13,102.37	0.00	0.00	0.00	
18,800.00	90.02	271.07	7,024.41	-1,340.49	-13,221.85	13,202.37	0.00	0.00	0.00	
18,900.00	90.02	271.07	7,024.37	-1,338.62	-13,321.83	13,302.37	0.00	0.00	0.00	
19,000.00	90.02	271.07	7,024.33	-1,336.75	-13,421.81	13,402.37	0.00	0.00	0.00	
19,100.00	90.02	271.07	7,024.29	-1,334.88	-13,521.79	13,502.37	0.00	0.00	0.00	
19,200.00	90.02	271.07	7,024.24	-1,333.02	-13,621.78	13,602.37	0.00	0.00	0.00	
19,300.00	90.02	271.07	7,024.20	-1,331.15	-13,721.76	13,702.37	0.00	0.00	0.00	
19,400.00	90.02	271.07	7,024.16	-1,329.28	-13,821.74	13,802.36	0.00	0.00	0.00	
19,495.73	90.02	271.07	7,024.12	-1,327.49	-13,917.45	13,898.09	0.00	0.00	0.00	
Begin Turn to BHL @ 19495.72ft										
19,500.00	90.02	271.01	7,024.12	-1,327.41	-13,921.72	13,902.36	1.50	0.00	-1.50	
19,559.89	90.02	270.11	7,024.09	-1,326.82	-13,981.61	13,962.25	1.50	0.00	-1.50	
End Turn @ 19559.89ft										
19,600.00	90.02	270.11	7,024.08	-1,326.75	-14,021.72	14,002.36	0.00	0.00	0.00	
19,700.00	90.02	270.11	7,024.03	-1,326.56	-14,121.72	14,102.35	0.00	0.00	0.00	
19,800.00	90.02	270.11	7,023.99	-1,326.37	-14,221.72	14,202.35	0.00	0.00	0.00	
19,900.00	90.02	270.11	7,023.95	-1,326.18	-14,321.72	14,302.34	0.00	0.00	0.00	
20,000.00	90.02	270.11	7,023.91	-1,325.99	-14,421.72	14,402.33	0.00	0.00	0.00	
20,100.00	90.02	270.11	7,023.86	-1,325.80	-14,521.72	14,502.32	0.00	0.00	0.00	
20,200.00	90.02	270.11	7,023.82	-1,325.61	-14,621.72	14,602.32	0.00	0.00	0.00	
20,300.00	90.02	270.11	7,023.78	-1,325.42	-14,721.72	14,702.31	0.00	0.00	0.00	
20,400.00	90.02	270.11	7,023.74	-1,325.23	-14,821.72	14,802.30	0.00	0.00	0.00	
20,500.00	90.02	270.11	7,023.70	-1,325.04	-14,921.72	14,902.30	0.00	0.00	0.00	
20,600.00	90.02	270.11	7,023.65	-1,324.85	-15,021.72	15,002.29	0.00	0.00	0.00	
20,700.00	90.02	270.11	7,023.61	-1,324.66	-15,121.72	15,102.28	0.00	0.00	0.00	
20,800.00	90.02	270.11	7,023.57	-1,324.47	-15,221.72	15,202.28	0.00	0.00	0.00	
20,900.00	90.02	270.11	7,023.53	-1,324.28	-15,321.72	15,302.27	0.00	0.00	0.00	
21,000.00	90.02	270.11	7,023.48	-1,324.09	-15,421.72	15,402.26	0.00	0.00	0.00	
21,100.00	90.02	270.11	7,023.44	-1,323.90	-15,521.72	15,502.26	0.00	0.00	0.00	
21,200.00	90.02	270.11	7,023.40	-1,323.71	-15,621.72	15,602.25	0.00	0.00	0.00	
21,300.00	90.02	270.11	7,023.36	-1,323.52	-15,721.72	15,702.24	0.00	0.00	0.00	
21,400.00	90.02	270.11	7,023.31	-1,323.33	-15,821.72	15,802.24	0.00	0.00	0.00	
21,500.00	90.02	270.11	7,023.27	-1,323.14	-15,921.72	15,902.23	0.00	0.00	0.00	
21,600.00	90.02	270.11	7,023.23	-1,322.95	-16,021.72	16,002.22	0.00	0.00	0.00	
21,700.00	90.02	270.11	7,023.19	-1,322.76	-16,121.72	16,102.21	0.00	0.00	0.00	
21,800.00	90.02	270.11	7,023.14	-1,322.57	-16,221.72	16,202.21	0.00	0.00	0.00	
21,900.00	90.02	270.11	7,023.10	-1,322.38	-16,321.72	16,302.20	0.00	0.00	0.00	
22,000.00	90.02	270.11	7,023.06	-1,322.19	-16,421.72	16,402.19	0.00	0.00	0.00	
22,100.00	90.02	270.11	7,023.02	-1,322.00	-16,521.72	16,502.19	0.00	0.00	0.00	
22,200.00	90.02	270.11	7,022.98	-1,321.81	-16,621.71	16,602.18	0.00	0.00	0.00	
22,300.00	90.02	270.11	7,022.93	-1,321.62	-16,721.71	16,702.17	0.00	0.00	0.00	
22,400.00	90.02	270.11	7,022.89	-1,321.43	-16,821.71	16,802.17	0.00	0.00	0.00	
22,500.00	90.02	270.11	7,022.85	-1,321.24	-16,921.71	16,902.16	0.00	0.00	0.00	
22,600.00	90.02	270.11	7,022.81	-1,321.05	-17,021.71	17,002.15	0.00	0.00	0.00	
22,700.00	90.02	270.11	7,022.76	-1,320.86	-17,121.71	17,102.15	0.00	0.00	0.00	
22,800.00	90.02	270.11	7,022.72	-1,320.67	-17,221.71	17,202.14	0.00	0.00	0.00	
22,900.00	90.02	270.11	7,022.68	-1,320.48	-17,321.71	17,302.13	0.00	0.00	0.00	
23,000.00	90.02	270.11	7,022.64	-1,320.29	-17,421.71	17,402.13	0.00	0.00	0.00	
23,100.00	90.02	270.11	7,022.59	-1,320.10	-17,521.71	17,502.12	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-16HZ
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 4-16HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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)	
23,200.00	90.02	270.11	7,022.55	-1,319.91	-17,621.71	17,602.11	0.00	0.00	0.00	
23,300.00	90.02	270.11	7,022.51	-1,319.72	-17,721.71	17,702.11	0.00	0.00	0.00	
23,400.00	90.02	270.11	7,022.47	-1,319.52	-17,821.71	17,802.10	0.00	0.00	0.00	
23,500.00	90.02	270.11	7,022.42	-1,319.33	-17,921.71	17,902.09	0.00	0.00	0.00	
23,600.00	90.02	270.11	7,022.38	-1,319.14	-18,021.71	18,002.08	0.00	0.00	0.00	
23,700.00	90.02	270.11	7,022.34	-1,318.95	-18,121.71	18,102.08	0.00	0.00	0.00	
23,800.00	90.02	270.11	7,022.30	-1,318.76	-18,221.71	18,202.07	0.00	0.00	0.00	
23,900.00	90.02	270.11	7,022.26	-1,318.57	-18,321.71	18,302.06	0.00	0.00	0.00	
24,000.00	90.02	270.11	7,022.21	-1,318.38	-18,421.71	18,402.06	0.00	0.00	0.00	
24,100.00	90.02	270.11	7,022.17	-1,318.19	-18,521.71	18,502.05	0.00	0.00	0.00	
24,200.00	90.02	270.11	7,022.13	-1,318.00	-18,621.71	18,602.04	0.00	0.00	0.00	
24,300.00	90.02	270.11	7,022.09	-1,317.81	-18,721.71	18,702.04	0.00	0.00	0.00	
24,400.00	90.02	270.11	7,022.04	-1,317.62	-18,821.71	18,802.03	0.00	0.00	0.00	
24,502.00	90.02	270.11	7,022.00	-1,317.43	-18,923.71	18,904.02	0.00	0.00	0.00	
TD Well @ 24502.00ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,526.50	1,500.00	9 5/8"	9-5/8	13-1/2	
24,502.00	7,022.00	5.5" CSG	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
708.50	707.00	Fox Hills				
3,766.56	3,598.00	Parkman				
4,281.21	4,080.00	Sussex				
7,278.66	6,841.00	Sharon Springs				
7,325.59	6,871.00	Niobrara				
7,724.48	7,023.00	Nio B				
7,818.75	7,029.00	Nio C		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
200.00	200.00	0.00	0.00	Begin Nudge @ 200.00ft	
1,568.00	1,538.94	-164.17	-178.29	Hold Tangent @ 1568.00ft	
6,877.25	6,511.32	-1,424.85	-1,547.34	KOP @ 6877.25ft :: DLS = 8°/100'	
7,819.07	7,029.00	-1,545.81	-2,242.84	End Build @ 7819.07ft	
19,495.73	7,024.12	-1,327.49	-13,917.45	Begin Turn to BHL @ 19495.72ft	
19,559.89	7,024.09	-1,326.82	-13,981.61	End Turn @ 19559.89ft	
24,502.00	7,022.00	-1,317.43	-18,923.71	TD Well @ 24502.00ft	