

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
3N-67W-04 SWARTZ 2-4HZ PAD
SWARTZ 4-7HZ**

Plan A

Plan: Permit Rev-1

Standard Planning Report

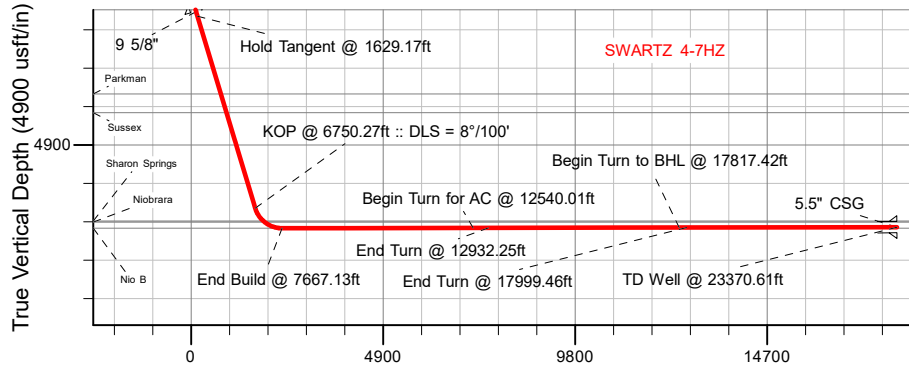
16 December, 2021

Project: WELD-NAD83-UTMFT13N
Site: 3N-67W-04 SWARTZ 2-4HZ PAD
Well: SWARTZ 4-7HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Name	Size
1500.00	1511.42	9 5/8"	9-5/8
6999.00	23370.61	5.5" CSG	5-1/2



Vertical Section at 270.51° (4900 usft/in)

SHL
681' FNL
1556' FEL

LP
592' FNL
1369' FWL

BHL
679' FNL
1270' FWL

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	
510.50	0.00	0.00	510.50	0.00	0.00	0.00	0.00	0.00	
1629.17	16.78	273.89	1613.24	11.03	-162.27	1.50	273.89	162.36	
6750.27	16.78	273.89	6516.29	111.33	-1637.31	0.00	0.00	1638.24	
7667.13	90.10	270.51	7026.00	126.55	-2324.25	8.00	-3.53	2325.28	SWARTZ 4-7HZ_Lat Tgt
12540.01	90.10	270.51	7017.61	170.17	-7196.93	0.00	0.00	7198.16	SWARTZ 4-7HZ_Lat Tgt 2
12932.25	90.10	276.40	7016.94	193.79	-7588.28	1.50	90.00	7589.70	
14852.76	90.10	276.40	7013.65	407.75	-9496.83	0.00	0.00	9500.08	
14889.76	90.10	276.40	7013.59	411.87	-9533.60	0.00	0.00	9536.89	
15359.58	90.10	267.00	7012.77	425.78	-10002.69	2.00	-89.98	10006.08	
17817.42	90.10	267.00	7008.48	297.15	-12457.16	0.00	0.00	12459.31	
17999.46	90.10	269.73	7008.17	291.95	-12639.10	1.50	90.04	12641.20	
23370.61	90.10	269.73	6999.00	266.70	-18010.19	0.00	0.00	18011.85	SWARTZ 4-7HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	Northing	Easting	Latitude	Longitude
SWARTZ 4-7HZ_SHL	0.00	14621529.32	1670649.50	40.260271	-104.891633
SWARTZ 4-7HZ_LP	7026.00	14621653.03	1668325.10	40.260618	-104.899964
SWARTZ 4-7HZ_BHL	6999.00	14621774.00	1652639.00	40.260985	-104.956190

WELL DETAILS: SWARTZ 4-7HZ

GL = 4825'

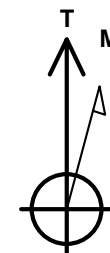
RKB = 17' @ 4842.00usft (RIG)

Plan: Permit Rev-1 (SWARTZ 4-7HZ/Plan A)

Date: 12/16/2021

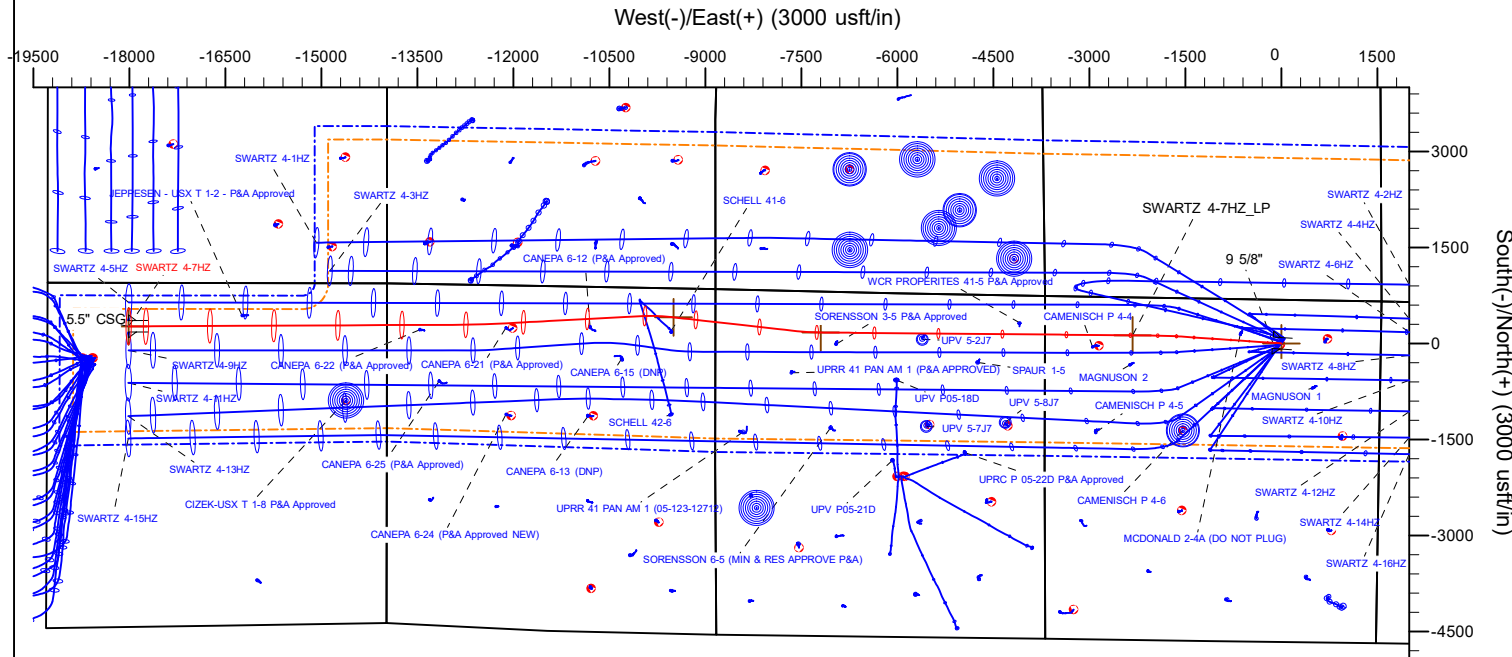
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
707.00	707.09	Fox Hills
3598.00	3702.19	Parkman
4080.00	4205.63	Sussex
6841.00	7139.29	Sharon Springs
6871.00	7185.72	Niobrara
7023.00	7600.28	Nio B



Azimuths to True North
Magnetic North: 7.86°

Magnetic Field
Strength: 51820.2nT
Dip Angle: 66.50°
Date: 11/26/2021
Model: IGRF2020



Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-7HZ
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 4-7HZ	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 4-7HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,621,529.32 usft	Latitude:	40.260271
	+E/-W	0.00 usft	Easting:	1,670,649.50 usft	Longitude:	-104.891633
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	51,820.16049066

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	270.51	

Plan Survey Tool Program	Date	12/15/2021			
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	23,370.61	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I	
				Fixed:v2:Rockies, crustal dec +	

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Well:	SWARTZ 4-7HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
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	
510.50	0.00	0.00	510.50	0.00	0.00	0.00	0.00	0.00	0.00	
1,629.17	16.78	273.89	1,613.24	11.03	-162.27	1.50	1.50	0.00	273.89	
6,750.27	16.78	273.89	6,516.29	111.33	-1,637.31	0.00	0.00	0.00	0.00	
7,667.13	90.10	270.51	7,026.00	126.55	-2,324.25	8.00	8.00	-0.37	-3.53	
12,540.01	90.10	270.51	7,017.61	170.17	-7,196.93	0.00	0.00	0.00	0.00	SWARTZ 4-7HZ_Lat`
12,932.25	90.10	276.40	7,016.94	193.79	-7,588.28	1.50	0.00	1.50	90.00	
14,852.76	90.10	276.40	7,013.65	407.75	-9,496.83	0.00	0.00	0.00	0.00	SWARTZ 4-7HZ_Lat`
14,889.76	90.10	276.40	7,013.59	411.87	-9,533.60	0.00	0.00	0.00	0.00	
15,359.58	90.10	267.00	7,012.77	425.78	-10,002.69	2.00	0.00	-2.00	-89.98	
17,817.42	90.10	267.00	7,008.48	297.15	-12,457.16	0.00	0.00	0.00	0.00	
17,999.46	90.10	269.73	7,008.17	291.95	-12,639.10	1.50	0.00	1.50	90.04	
23,370.61	90.10	269.73	6,999.00	266.70	-18,010.19	0.00	0.00	0.00	0.00	SWARTZ 4-7HZ_BHL

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 4-7HZ	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
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
510.50	0.00	0.00	510.50	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 510.50ft									
600.00	1.34	273.89	599.99	0.07	-1.05	1.05	1.50	1.50	0.00
700.00	2.84	273.89	699.92	0.32	-4.69	4.69	1.50	1.50	0.00
707.09	2.95	273.89	707.00	0.34	-5.05	5.05	1.50	1.50	0.00
Fox Hills									
800.00	4.34	273.89	799.72	0.74	-10.94	10.95	1.50	1.50	0.00
900.00	5.84	273.89	899.33	1.35	-19.80	19.81	1.50	1.50	0.00
1,000.00	7.34	273.89	998.66	2.12	-31.25	31.27	1.50	1.50	0.00
1,100.00	8.84	273.89	1,097.66	3.08	-45.29	45.32	1.50	1.50	0.00
1,200.00	10.34	273.89	1,196.26	4.21	-61.92	61.95	1.50	1.50	0.00
1,300.00	11.84	273.89	1,294.39	5.52	-81.11	81.16	1.50	1.50	0.00
1,400.00	13.34	273.89	1,391.98	6.99	-102.86	102.92	1.50	1.50	0.00
1,500.00	14.84	273.89	1,488.97	8.65	-127.16	127.23	1.50	1.50	0.00
1,511.42	15.01	273.89	1,500.00	8.85	-130.09	130.16	1.50	1.50	0.00
9 5/8"									
1,600.00	16.34	273.89	1,585.29	10.47	-153.97	154.06	1.50	1.50	0.00
1,629.17	16.78	273.89	1,613.24	11.03	-162.27	162.36	1.50	1.50	0.00
Hold Tangent @ 1629.17ft									
1,700.00	16.78	273.89	1,681.06	12.42	-182.67	182.77	0.00	0.00	0.00
1,800.00	16.78	273.89	1,776.80	14.38	-211.47	211.59	0.00	0.00	0.00
1,900.00	16.78	273.89	1,872.55	16.34	-240.28	240.41	0.00	0.00	0.00
2,000.00	16.78	273.89	1,968.29	18.30	-269.08	269.23	0.00	0.00	0.00
2,100.00	16.78	273.89	2,064.03	20.26	-297.88	298.05	0.00	0.00	0.00
2,200.00	16.78	273.89	2,159.77	22.21	-326.69	326.87	0.00	0.00	0.00
2,300.00	16.78	273.89	2,255.51	24.17	-355.49	355.69	0.00	0.00	0.00
2,400.00	16.78	273.89	2,351.26	26.13	-384.29	384.51	0.00	0.00	0.00
2,500.00	16.78	273.89	2,447.00	28.09	-413.10	413.33	0.00	0.00	0.00
2,600.00	16.78	273.89	2,542.74	30.05	-441.90	442.15	0.00	0.00	0.00
2,700.00	16.78	273.89	2,638.48	32.01	-470.70	470.97	0.00	0.00	0.00
2,800.00	16.78	273.89	2,734.22	33.97	-499.51	499.79	0.00	0.00	0.00
2,900.00	16.78	273.89	2,829.97	35.92	-528.31	528.61	0.00	0.00	0.00
3,000.00	16.78	273.89	2,925.71	37.88	-557.11	557.43	0.00	0.00	0.00
3,100.00	16.78	273.89	3,021.45	39.84	-585.92	586.25	0.00	0.00	0.00
3,200.00	16.78	273.89	3,117.19	41.80	-614.72	615.07	0.00	0.00	0.00
3,300.00	16.78	273.89	3,212.93	43.76	-643.52	643.89	0.00	0.00	0.00
3,400.00	16.78	273.89	3,308.68	45.72	-672.33	672.71	0.00	0.00	0.00
3,500.00	16.78	273.89	3,404.42	47.68	-701.13	701.53	0.00	0.00	0.00
3,600.00	16.78	273.89	3,500.16	49.63	-729.93	730.34	0.00	0.00	0.00
3,700.00	16.78	273.89	3,595.90	51.59	-758.73	759.16	0.00	0.00	0.00
3,702.19	16.78	273.89	3,598.00	51.64	-759.37	759.80	0.00	0.00	0.00
Parkman									
3,800.00	16.78	273.89	3,691.64	53.55	-787.54	787.98	0.00	0.00	0.00
3,900.00	16.78	273.89	3,787.39	55.51	-816.34	816.80	0.00	0.00	0.00
4,000.00	16.78	273.89	3,883.13	57.47	-845.14	845.62	0.00	0.00	0.00
4,100.00	16.78	273.89	3,978.87	59.43	-873.95	874.44	0.00	0.00	0.00
4,200.00	16.78	273.89	4,074.61	61.39	-902.75	903.26	0.00	0.00	0.00
4,205.63	16.78	273.89	4,080.00	61.50	-904.37	904.88	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-7HZ
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 4-7HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Sussex									
4,300.00	16.78	273.89	4,170.35	63.34	-931.55	932.08	0.00	0.00	0.00
4,400.00	16.78	273.89	4,266.10	65.30	-960.36	960.90	0.00	0.00	0.00
4,500.00	16.78	273.89	4,361.84	67.26	-989.16	989.72	0.00	0.00	0.00
4,600.00	16.78	273.89	4,457.58	69.22	-1,017.96	1,018.54	0.00	0.00	0.00
4,700.00	16.78	273.89	4,553.32	71.18	-1,046.77	1,047.36	0.00	0.00	0.00
4,800.00	16.78	273.89	4,649.06	73.14	-1,075.57	1,076.18	0.00	0.00	0.00
4,900.00	16.78	273.89	4,744.81	75.10	-1,104.37	1,105.00	0.00	0.00	0.00
5,000.00	16.78	273.89	4,840.55	77.05	-1,133.18	1,133.82	0.00	0.00	0.00
5,100.00	16.78	273.89	4,936.29	79.01	-1,161.98	1,162.64	0.00	0.00	0.00
5,200.00	16.78	273.89	5,032.03	80.97	-1,190.78	1,191.46	0.00	0.00	0.00
5,300.00	16.78	273.89	5,127.77	82.93	-1,219.59	1,220.28	0.00	0.00	0.00
5,400.00	16.78	273.89	5,223.52	84.89	-1,248.39	1,249.10	0.00	0.00	0.00
5,500.00	16.78	273.89	5,319.26	86.85	-1,277.19	1,277.92	0.00	0.00	0.00
5,600.00	16.78	273.89	5,415.00	88.80	-1,306.00	1,306.74	0.00	0.00	0.00
5,700.00	16.78	273.89	5,510.74	90.76	-1,334.80	1,335.55	0.00	0.00	0.00
5,800.00	16.78	273.89	5,606.48	92.72	-1,363.60	1,364.37	0.00	0.00	0.00
5,900.00	16.78	273.89	5,702.23	94.68	-1,392.41	1,393.19	0.00	0.00	0.00
6,000.00	16.78	273.89	5,797.97	96.64	-1,421.21	1,422.01	0.00	0.00	0.00
6,100.00	16.78	273.89	5,893.71	98.60	-1,450.01	1,450.83	0.00	0.00	0.00
6,200.00	16.78	273.89	5,989.45	100.56	-1,478.82	1,479.65	0.00	0.00	0.00
6,300.00	16.78	273.89	6,085.19	102.51	-1,507.62	1,508.47	0.00	0.00	0.00
6,400.00	16.78	273.89	6,180.94	104.47	-1,536.42	1,537.29	0.00	0.00	0.00
6,500.00	16.78	273.89	6,276.68	106.43	-1,565.23	1,566.11	0.00	0.00	0.00
6,600.00	16.78	273.89	6,372.42	108.39	-1,594.03	1,594.93	0.00	0.00	0.00
6,700.00	16.78	273.89	6,468.16	110.35	-1,622.83	1,623.75	0.00	0.00	0.00
6,750.27	16.78	273.89	6,516.29	111.33	-1,637.31	1,638.24	0.00	0.00	0.00
KOP @ 6750.27ft :: DLS = 8°/100'									
6,800.00	20.75	273.20	6,563.37	112.31	-1,653.28	1,654.21	8.00	7.99	-1.39
6,850.00	24.75	272.72	6,609.47	113.30	-1,672.58	1,673.53	8.00	7.99	-0.96
6,900.00	28.74	272.37	6,654.11	114.30	-1,695.06	1,696.01	8.00	7.99	-0.70
6,950.00	32.74	272.10	6,697.08	115.29	-1,720.59	1,721.55	8.00	8.00	-0.55
7,000.00	36.74	271.88	6,738.15	116.28	-1,749.06	1,750.03	8.00	8.00	-0.44
7,050.00	40.74	271.70	6,777.15	117.25	-1,780.33	1,781.31	8.00	8.00	-0.36
7,100.00	44.74	271.54	6,813.86	118.21	-1,814.24	1,815.22	8.00	8.00	-0.31
7,139.29	47.88	271.43	6,841.00	118.94	-1,842.64	1,843.63	8.00	8.00	-0.27
Sharon Springs									
7,150.00	48.74	271.41	6,848.12	119.14	-1,850.64	1,851.62	8.00	8.00	-0.25
7,185.72	51.59	271.32	6,871.00	119.79	-1,878.05	1,879.04	8.00	8.00	-0.24
Niobrara									
7,200.00	52.74	271.29	6,879.76	120.05	-1,889.33	1,890.32	8.00	8.00	-0.23
7,250.00	56.73	271.18	6,908.62	120.93	-1,930.14	1,931.14	8.00	8.00	-0.21
7,300.00	60.73	271.08	6,934.57	121.77	-1,972.86	1,973.86	8.00	8.00	-0.19
7,350.00	64.73	270.99	6,957.47	122.58	-2,017.28	2,018.30	8.00	8.00	-0.18
7,400.00	68.73	270.91	6,977.22	123.34	-2,063.20	2,064.22	8.00	8.00	-0.17
7,450.00	72.73	270.83	6,993.71	124.06	-2,110.39	2,111.41	8.00	8.00	-0.16
7,500.00	76.73	270.75	7,006.88	124.73	-2,158.61	2,159.63	8.00	8.00	-0.15
7,550.00	80.73	270.68	7,016.65	125.34	-2,207.63	2,208.66	8.00	8.00	-0.15
7,600.00	84.73	270.61	7,022.97	125.90	-2,257.21	2,258.25	8.00	8.00	-0.14
7,600.28	84.75	270.61	7,023.00	125.90	-2,257.49	2,258.52	8.00	8.00	-0.14
Nio B									
7,650.00	88.73	270.54	7,025.83	126.40	-2,307.12	2,308.15	8.00	8.00	-0.14
7,667.13	90.10	270.51	7,026.00	126.55	-2,324.25	2,325.28	8.00	8.00	-0.14

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-7HZ
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 4-7HZ	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 @ 7667.13ft									
7,700.00	90.10	270.51	7,025.95	126.85	-2,357.12	2,358.15	0.00	0.00	0.00
7,800.00	90.10	270.51	7,025.77	127.74	-2,457.11	2,458.15	0.00	0.00	0.00
7,900.00	90.10	270.51	7,025.60	128.64	-2,557.11	2,558.15	0.00	0.00	0.00
8,000.00	90.10	270.51	7,025.43	129.53	-2,657.10	2,658.15	0.00	0.00	0.00
8,100.00	90.10	270.51	7,025.26	130.43	-2,757.10	2,758.15	0.00	0.00	0.00
8,200.00	90.10	270.51	7,025.08	131.32	-2,857.10	2,858.15	0.00	0.00	0.00
8,300.00	90.10	270.51	7,024.91	132.22	-2,957.09	2,958.15	0.00	0.00	0.00
8,400.00	90.10	270.51	7,024.74	133.11	-3,057.09	3,058.15	0.00	0.00	0.00
8,500.00	90.10	270.51	7,024.57	134.01	-3,157.08	3,158.15	0.00	0.00	0.00
8,600.00	90.10	270.51	7,024.40	134.90	-3,257.08	3,258.15	0.00	0.00	0.00
8,700.00	90.10	270.51	7,024.22	135.80	-3,357.08	3,358.15	0.00	0.00	0.00
8,800.00	90.10	270.51	7,024.05	136.69	-3,457.07	3,458.15	0.00	0.00	0.00
8,900.00	90.10	270.51	7,023.88	137.59	-3,557.07	3,558.15	0.00	0.00	0.00
9,000.00	90.10	270.51	7,023.71	138.48	-3,657.06	3,658.15	0.00	0.00	0.00
9,100.00	90.10	270.51	7,023.53	139.38	-3,757.06	3,758.15	0.00	0.00	0.00
9,200.00	90.10	270.51	7,023.36	140.27	-3,857.05	3,858.15	0.00	0.00	0.00
9,300.00	90.10	270.51	7,023.19	141.17	-3,957.05	3,958.15	0.00	0.00	0.00
9,400.00	90.10	270.51	7,023.02	142.06	-4,057.05	4,058.15	0.00	0.00	0.00
9,500.00	90.10	270.51	7,022.85	142.96	-4,157.04	4,158.15	0.00	0.00	0.00
9,600.00	90.10	270.51	7,022.67	143.85	-4,257.04	4,258.15	0.00	0.00	0.00
9,700.00	90.10	270.51	7,022.50	144.75	-4,357.03	4,358.15	0.00	0.00	0.00
9,800.00	90.10	270.51	7,022.33	145.64	-4,457.03	4,458.15	0.00	0.00	0.00
9,900.00	90.10	270.51	7,022.16	146.54	-4,557.03	4,558.15	0.00	0.00	0.00
10,000.00	90.10	270.51	7,021.98	147.43	-4,657.02	4,658.15	0.00	0.00	0.00
10,100.00	90.10	270.51	7,021.81	148.33	-4,757.02	4,758.15	0.00	0.00	0.00
10,200.00	90.10	270.51	7,021.64	149.22	-4,857.01	4,858.15	0.00	0.00	0.00
10,300.00	90.10	270.51	7,021.47	150.12	-4,957.01	4,958.15	0.00	0.00	0.00
10,400.00	90.10	270.51	7,021.30	151.01	-5,057.00	5,058.15	0.00	0.00	0.00
10,500.00	90.10	270.51	7,021.12	151.91	-5,157.00	5,158.15	0.00	0.00	0.00
10,600.00	90.10	270.51	7,020.95	152.81	-5,257.00	5,258.15	0.00	0.00	0.00
10,700.00	90.10	270.51	7,020.78	153.70	-5,356.99	5,358.15	0.00	0.00	0.00
10,800.00	90.10	270.51	7,020.61	154.60	-5,456.99	5,458.15	0.00	0.00	0.00
10,900.00	90.10	270.51	7,020.43	155.49	-5,556.98	5,558.15	0.00	0.00	0.00
11,000.00	90.10	270.51	7,020.26	156.39	-5,656.98	5,658.15	0.00	0.00	0.00
11,100.00	90.10	270.51	7,020.09	157.28	-5,756.98	5,758.15	0.00	0.00	0.00
11,200.00	90.10	270.51	7,019.92	158.18	-5,856.97	5,858.15	0.00	0.00	0.00
11,300.00	90.10	270.51	7,019.75	159.07	-5,956.97	5,958.15	0.00	0.00	0.00
11,400.00	90.10	270.51	7,019.57	159.97	-6,056.96	6,058.15	0.00	0.00	0.00
11,500.00	90.10	270.51	7,019.40	160.86	-6,156.96	6,158.15	0.00	0.00	0.00
11,600.00	90.10	270.51	7,019.23	161.76	-6,256.95	6,258.15	0.00	0.00	0.00
11,700.00	90.10	270.51	7,019.06	162.65	-6,356.95	6,358.15	0.00	0.00	0.00
11,800.00	90.10	270.51	7,018.88	163.55	-6,456.95	6,458.15	0.00	0.00	0.00
11,900.00	90.10	270.51	7,018.71	164.44	-6,556.94	6,558.15	0.00	0.00	0.00
12,000.00	90.10	270.51	7,018.54	165.34	-6,656.94	6,658.15	0.00	0.00	0.00
12,100.00	90.10	270.51	7,018.37	166.23	-6,756.93	6,758.15	0.00	0.00	0.00
12,200.00	90.10	270.51	7,018.20	167.13	-6,856.93	6,858.15	0.00	0.00	0.00
12,300.00	90.10	270.51	7,018.02	168.02	-6,956.93	6,958.15	0.00	0.00	0.00
12,400.00	90.10	270.51	7,017.85	168.92	-7,056.92	7,058.15	0.00	0.00	0.00
12,500.00	90.10	270.51	7,017.68	169.81	-7,156.92	7,158.15	0.00	0.00	0.00
12,540.01	90.10	270.51	7,017.61	170.17	-7,196.93	7,198.16	0.00	0.00	0.00
Begin Turn for AC @ 12540.01ft									
12,600.00	90.10	271.41	7,017.51	171.18	-7,256.91	7,258.14	1.50	0.00	1.50
12,700.00	90.10	272.91	7,017.33	174.95	-7,356.83	7,358.10	1.50	0.00	1.50

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-7HZ
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 4-7HZ	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)	
12,800.00	90.10	274.41	7,017.16	181.34	-7,456.63	7,457.94	1.50	0.00	1.50	
12,900.00	90.10	275.91	7,016.99	190.34	-7,556.22	7,557.61	1.50	0.00	1.50	
12,932.25	90.10	276.40	7,016.94	193.79	-7,588.28	7,589.70	1.50	0.00	1.50	
End Turn @ 12932.25ft										
13,000.00	90.10	276.40	7,016.82	201.34	-7,655.61	7,657.10	0.00	0.00	0.00	
13,100.00	90.10	276.40	7,016.65	212.48	-7,754.99	7,756.57	0.00	0.00	0.00	
13,200.00	90.10	276.40	7,016.48	223.62	-7,854.36	7,856.04	0.00	0.00	0.00	
13,300.00	90.10	276.40	7,016.31	234.76	-7,953.74	7,955.52	0.00	0.00	0.00	
13,400.00	90.10	276.40	7,016.14	245.90	-8,053.12	8,054.99	0.00	0.00	0.00	
13,500.00	90.10	276.40	7,015.96	257.05	-8,152.50	8,154.46	0.00	0.00	0.00	
13,600.00	90.10	276.40	7,015.79	268.19	-8,251.87	8,253.93	0.00	0.00	0.00	
13,700.00	90.10	276.40	7,015.62	279.33	-8,351.25	8,353.41	0.00	0.00	0.00	
13,800.00	90.10	276.40	7,015.45	290.47	-8,450.63	8,452.88	0.00	0.00	0.00	
13,900.00	90.10	276.40	7,015.28	301.61	-8,550.00	8,552.35	0.00	0.00	0.00	
14,000.00	90.10	276.40	7,015.11	312.75	-8,649.38	8,651.82	0.00	0.00	0.00	
14,100.00	90.10	276.40	7,014.94	323.89	-8,748.76	8,751.30	0.00	0.00	0.00	
14,200.00	90.10	276.40	7,014.77	335.03	-8,848.14	8,850.77	0.00	0.00	0.00	
14,300.00	90.10	276.40	7,014.60	346.17	-8,947.51	8,950.24	0.00	0.00	0.00	
14,400.00	90.10	276.40	7,014.42	357.31	-9,046.89	9,049.71	0.00	0.00	0.00	
14,500.00	90.10	276.40	7,014.25	368.45	-9,146.27	9,149.19	0.00	0.00	0.00	
14,600.00	90.10	276.40	7,014.08	379.59	-9,245.65	9,248.66	0.00	0.00	0.00	
14,700.00	90.10	276.40	7,013.91	390.73	-9,345.02	9,348.13	0.00	0.00	0.00	
14,800.00	90.10	276.40	7,013.74	401.87	-9,444.40	9,447.60	0.00	0.00	0.00	
14,852.76	90.10	276.40	7,013.65	407.75	-9,496.83	9,500.08	0.00	0.00	0.00	
Hold @ 14852.76ft										
14,889.76	90.10	276.40	7,013.59	411.87	-9,533.60	9,536.89	0.00	0.00	0.00	
Begin Turn @ 14889.76ft										
14,900.00	90.10	276.19	7,013.57	412.99	-9,543.78	9,547.08	2.00	0.00	-2.00	
15,000.00	90.10	274.19	7,013.40	422.04	-9,643.37	9,646.74	2.00	0.00	-2.00	
15,100.00	90.10	272.19	7,013.22	427.61	-9,743.20	9,746.62	2.00	0.00	-2.00	
15,200.00	90.10	270.19	7,013.05	429.69	-9,843.18	9,846.61	2.00	0.00	-2.00	
15,300.00	90.10	268.19	7,012.88	428.28	-9,943.16	9,946.58	2.00	0.00	-2.00	
15,359.58	90.10	267.00	7,012.77	425.78	-10,002.69	10,006.08	2.00	0.00	-2.00	
End Turn @ 15359.58ft										
15,400.00	90.10	267.00	7,012.70	423.66	-10,043.05	10,046.43	0.00	0.00	0.00	
15,500.00	90.10	267.00	7,012.53	418.43	-10,142.92	10,146.24	0.00	0.00	0.00	
15,600.00	90.10	267.00	7,012.35	413.20	-10,242.78	10,246.05	0.00	0.00	0.00	
15,700.00	90.10	267.00	7,012.18	407.96	-10,342.64	10,345.86	0.00	0.00	0.00	
15,800.00	90.10	267.00	7,012.00	402.73	-10,442.50	10,445.68	0.00	0.00	0.00	
15,900.00	90.10	267.00	7,011.83	397.50	-10,542.37	10,545.49	0.00	0.00	0.00	
16,000.00	90.10	267.00	7,011.66	392.26	-10,642.23	10,645.30	0.00	0.00	0.00	
16,100.00	90.10	267.00	7,011.48	387.03	-10,742.09	10,745.11	0.00	0.00	0.00	
16,200.00	90.10	267.00	7,011.31	381.80	-10,841.96	10,844.92	0.00	0.00	0.00	
16,300.00	90.10	267.00	7,011.13	376.56	-10,941.82	10,944.74	0.00	0.00	0.00	
16,400.00	90.10	267.00	7,010.96	371.33	-11,041.68	11,044.55	0.00	0.00	0.00	
16,500.00	90.10	267.00	7,010.78	366.09	-11,141.54	11,144.36	0.00	0.00	0.00	
16,600.00	90.10	267.00	7,010.61	360.86	-11,241.41	11,244.17	0.00	0.00	0.00	
16,700.00	90.10	267.00	7,010.43	355.63	-11,341.27	11,343.99	0.00	0.00	0.00	
16,800.00	90.10	267.00	7,010.26	350.39	-11,441.13	11,443.80	0.00	0.00	0.00	
16,900.00	90.10	267.00	7,010.08	345.16	-11,541.00	11,543.61	0.00	0.00	0.00	
17,000.00	90.10	267.00	7,009.91	339.93	-11,640.86	11,643.42	0.00	0.00	0.00	
17,100.00	90.10	267.00	7,009.74	334.69	-11,740.72	11,743.24	0.00	0.00	0.00	
17,200.00	90.10	267.00	7,009.56	329.46	-11,840.58	11,843.05	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-7HZ
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 4-7HZ	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)
17,300.00	90.10	267.00	7,009.39	324.23	-11,940.45	11,942.86	0.00	0.00	0.00
17,400.00	90.10	267.00	7,009.21	318.99	-12,040.31	12,042.67	0.00	0.00	0.00
17,500.00	90.10	267.00	7,009.04	313.76	-12,140.17	12,142.48	0.00	0.00	0.00
17,600.00	90.10	267.00	7,008.86	308.53	-12,240.04	12,242.30	0.00	0.00	0.00
17,700.00	90.10	267.00	7,008.69	303.29	-12,339.90	12,342.11	0.00	0.00	0.00
17,800.00	90.10	267.00	7,008.51	298.06	-12,439.76	12,441.92	0.00	0.00	0.00
17,817.42	90.10	267.00	7,008.48	297.15	-12,457.16	12,459.31	0.00	0.00	0.00
Begin Turn to BHL @ 17817.42ft									
17,900.00	90.10	268.24	7,008.34	293.72	-12,539.66	12,541.78	1.50	0.00	1.50
17,999.46	90.10	269.73	7,008.17	291.95	-12,639.10	12,641.20	1.50	0.00	1.50
End Turn @ 17999.46ft									
18,100.00	90.10	269.73	7,008.00	291.48	-12,739.64	12,741.73	0.00	0.00	0.00
18,200.00	90.10	269.73	7,007.83	291.01	-12,839.64	12,841.72	0.00	0.00	0.00
18,300.00	90.10	269.73	7,007.66	290.54	-12,939.64	12,941.72	0.00	0.00	0.00
18,400.00	90.10	269.73	7,007.49	290.07	-13,039.64	13,041.71	0.00	0.00	0.00
18,500.00	90.10	269.73	7,007.31	289.60	-13,139.64	13,141.70	0.00	0.00	0.00
18,600.00	90.10	269.73	7,007.14	289.13	-13,239.64	13,241.69	0.00	0.00	0.00
18,700.00	90.10	269.73	7,006.97	288.66	-13,339.64	13,341.68	0.00	0.00	0.00
18,800.00	90.10	269.73	7,006.80	288.19	-13,439.64	13,441.67	0.00	0.00	0.00
18,900.00	90.10	269.73	7,006.63	287.72	-13,539.63	13,541.66	0.00	0.00	0.00
19,000.00	90.10	269.73	7,006.46	287.25	-13,639.63	13,641.65	0.00	0.00	0.00
19,100.00	90.10	269.73	7,006.29	286.78	-13,739.63	13,741.64	0.00	0.00	0.00
19,200.00	90.10	269.73	7,006.12	286.31	-13,839.63	13,841.63	0.00	0.00	0.00
19,300.00	90.10	269.73	7,005.95	285.84	-13,939.63	13,941.62	0.00	0.00	0.00
19,400.00	90.10	269.73	7,005.78	285.37	-14,039.63	14,041.61	0.00	0.00	0.00
19,500.00	90.10	269.73	7,005.61	284.90	-14,139.63	14,141.60	0.00	0.00	0.00
19,600.00	90.10	269.73	7,005.44	284.43	-14,239.63	14,241.59	0.00	0.00	0.00
19,700.00	90.10	269.73	7,005.27	283.96	-14,339.62	14,341.58	0.00	0.00	0.00
19,800.00	90.10	269.73	7,005.10	283.49	-14,439.62	14,441.57	0.00	0.00	0.00
19,900.00	90.10	269.73	7,004.92	283.02	-14,539.62	14,541.56	0.00	0.00	0.00
20,000.00	90.10	269.73	7,004.75	282.55	-14,639.62	14,641.56	0.00	0.00	0.00
20,100.00	90.10	269.73	7,004.58	282.08	-14,739.62	14,741.55	0.00	0.00	0.00
20,200.00	90.10	269.73	7,004.41	281.61	-14,839.62	14,841.54	0.00	0.00	0.00
20,300.00	90.10	269.73	7,004.24	281.14	-14,939.62	14,941.53	0.00	0.00	0.00
20,400.00	90.10	269.73	7,004.07	280.67	-15,039.62	15,041.52	0.00	0.00	0.00
20,500.00	90.10	269.73	7,003.90	280.19	-15,139.61	15,141.51	0.00	0.00	0.00
20,600.00	90.10	269.73	7,003.73	279.72	-15,239.61	15,241.50	0.00	0.00	0.00
20,700.00	90.10	269.73	7,003.56	279.25	-15,339.61	15,341.49	0.00	0.00	0.00
20,800.00	90.10	269.73	7,003.39	278.78	-15,439.61	15,441.48	0.00	0.00	0.00
20,900.00	90.10	269.73	7,003.22	278.31	-15,539.61	15,541.47	0.00	0.00	0.00
21,000.00	90.10	269.73	7,003.05	277.84	-15,639.61	15,641.46	0.00	0.00	0.00
21,100.00	90.10	269.73	7,002.88	277.37	-15,739.61	15,741.45	0.00	0.00	0.00
21,200.00	90.10	269.73	7,002.71	276.90	-15,839.61	15,841.44	0.00	0.00	0.00
21,300.00	90.10	269.73	7,002.53	276.43	-15,939.60	15,941.43	0.00	0.00	0.00
21,400.00	90.10	269.73	7,002.36	275.96	-16,039.60	16,041.42	0.00	0.00	0.00
21,500.00	90.10	269.73	7,002.19	275.49	-16,139.60	16,141.41	0.00	0.00	0.00
21,600.00	90.10	269.73	7,002.02	275.02	-16,239.60	16,241.41	0.00	0.00	0.00
21,700.00	90.10	269.73	7,001.85	274.55	-16,339.60	16,341.40	0.00	0.00	0.00
21,800.00	90.10	269.73	7,001.68	274.08	-16,439.60	16,441.39	0.00	0.00	0.00
21,900.00	90.10	269.73	7,001.51	273.61	-16,539.60	16,541.38	0.00	0.00	0.00
22,000.00	90.10	269.73	7,001.34	273.14	-16,639.60	16,641.37	0.00	0.00	0.00
22,100.00	90.10	269.73	7,001.17	272.67	-16,739.59	16,741.36	0.00	0.00	0.00
22,200.00	90.10	269.73	7,001.00	272.20	-16,839.59	16,841.35	0.00	0.00	0.00
22,300.00	90.10	269.73	7,000.83	271.73	-16,939.59	16,941.34	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-7HZ
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 4-7HZ	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)
22,400.00	90.10	269.73	7,000.66	271.26	-17,039.59	17,041.33	0.00	0.00	0.00
22,500.00	90.10	269.73	7,000.49	270.79	-17,139.59	17,141.32	0.00	0.00	0.00
22,600.00	90.10	269.73	7,000.32	270.32	-17,239.59	17,241.31	0.00	0.00	0.00
22,700.00	90.10	269.73	7,000.14	269.85	-17,339.59	17,341.30	0.00	0.00	0.00
22,800.00	90.10	269.73	6,999.97	269.38	-17,439.59	17,441.29	0.00	0.00	0.00
22,900.00	90.10	269.73	6,999.80	268.91	-17,539.58	17,541.28	0.00	0.00	0.00
23,000.00	90.10	269.73	6,999.63	268.44	-17,639.58	17,641.27	0.00	0.00	0.00
23,100.00	90.10	269.73	6,999.46	267.97	-17,739.58	17,741.26	0.00	0.00	0.00
23,200.00	90.10	269.73	6,999.29	267.50	-17,839.58	17,841.25	0.00	0.00	0.00
23,300.00	90.10	269.73	6,999.12	267.03	-17,939.58	17,941.25	0.00	0.00	0.00
23,370.61	90.10	269.73	6,999.00	266.70	-18,010.19	18,011.85	0.00	0.00	0.00
TD Well @ 23370.61ft									

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,511.42	1,500.00	9 5/8"	9-5/8	13-1/2
23,370.61	6,999.00	5.5" CSG	5-1/2	7-7/8

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
707.09	707.00	Fox Hills			
3,702.19	3,598.00	Parkman			
4,205.63	4,080.00	Sussex			
7,139.29	6,841.00	Sharon Springs			
7,185.72	6,871.00	Niobrara			
7,600.28	7,023.00	Nio B			

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
510.50	510.50	0.00	0.00	Begin Nudge @ 510.50ft
1,629.17	1,613.24	11.03	-162.27	Hold Tangent @ 1629.17ft
6,750.27	6,516.29	111.33	-1,637.31	KOP @ 6750.27ft :: DLS = 8°/100'
7,667.13	7,026.00	126.55	-2,324.25	End Build @ 7667.13ft
12,540.01	7,017.61	170.17	-7,196.93	Begin Turn for AC @ 12540.01ft
12,932.25	7,016.94	193.79	-7,588.28	End Turn @ 12932.25ft
14,852.76	7,013.65	407.75	-9,496.83	Hold @ 14852.76ft
14,889.76	7,013.59	411.87	-9,533.60	Begin Turn @ 14889.76ft
15,359.58	7,012.77	425.78	-10,002.69	End Turn @ 15359.58ft
17,817.42	7,008.48	297.15	-12,457.16	Begin Turn to BHL @ 17817.42ft
17,999.46	7,008.17	291.95	-12,639.10	End Turn @ 17999.46ft
23,370.61	6,999.00	266.70	-18,010.19	TD Well @ 23370.61ft