

US ROCKIES WATTENBERG PLANNING

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

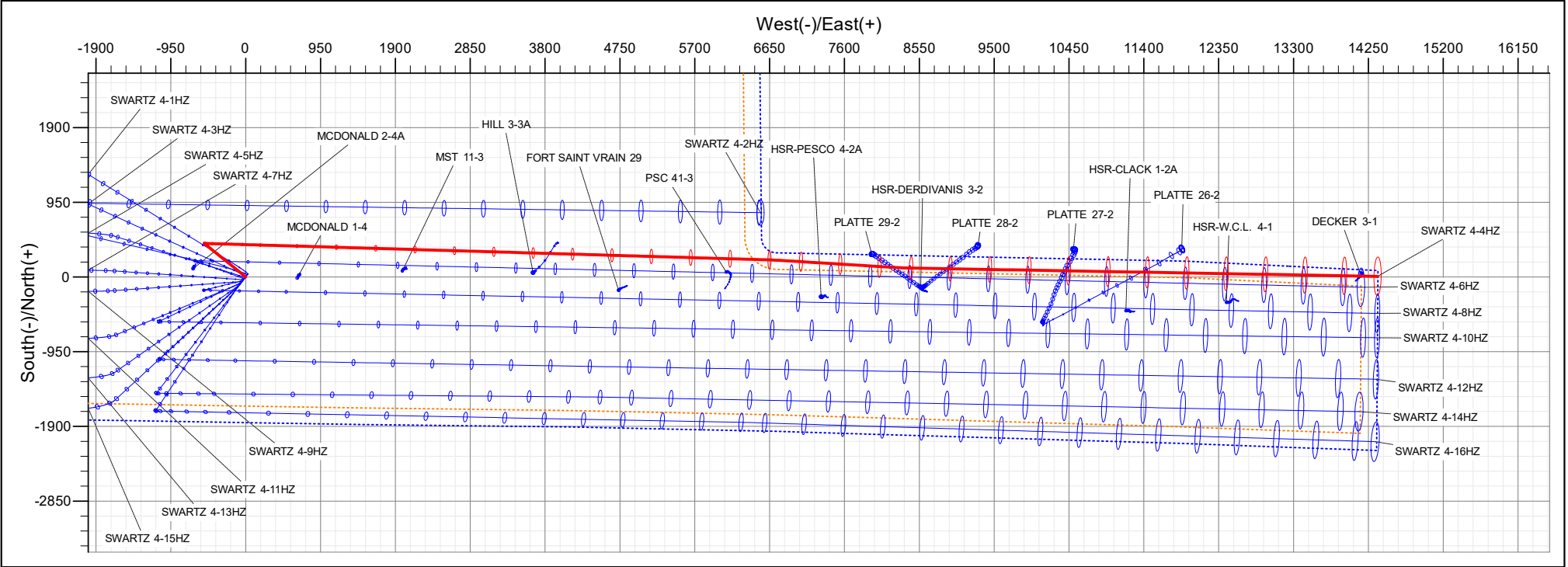
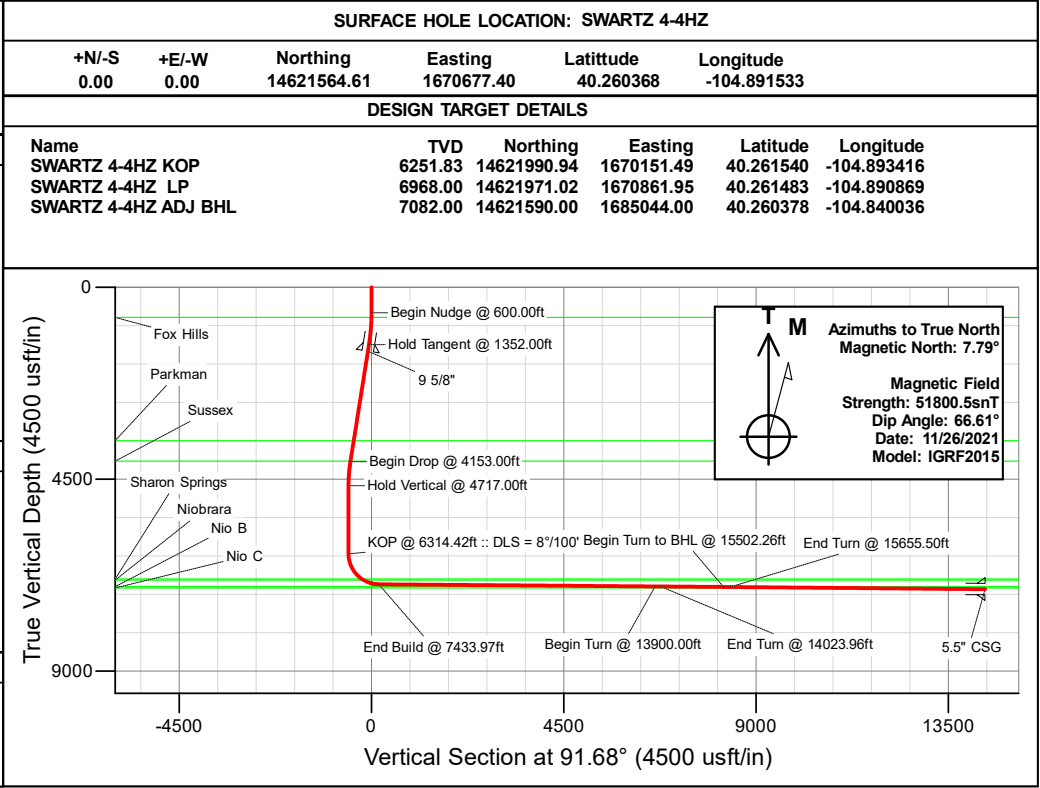
Plan A

Plan: Permit Rev-2

Standard Planning Report

26 January, 2022

Project: WELD-NAD83-UTMFT13N Site: 3N-67W-04 SWARTZ 2-4HZ PAD Well: SWARTZ 4-4HZ Wellbore: Plan A Design: Permit Rev-2										
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	600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	
3	1352.00	11.28	309.10	1347.15	46.53	-57.26	1.50	309.10	-58.60	
4	4153.00	11.28	309.10	4094.04	392.07	-482.45	0.00	0.00	-493.73	
5	4717.00	0.00	0.00	4654.41	426.97	-525.39	2.00	180.00	-537.68	
6	6314.42	0.00	0.00	6251.83	426.97	-525.39	0.00	0.00	-537.68	
7	7433.97	89.56	91.68	6968.00	406.19	185.05	8.00	91.68	173.07	
8	13900.00	89.56	91.68	7017.18	217.09	6648.13	0.00	0.00	6638.91	
9	14023.96	89.56	93.54	7018.12	211.46	6771.95	1.50	89.99	6762.84	
10	15502.26	89.56	93.54	7029.35	120.30	8247.40	0.00	0.00	8240.33	
11	15670.08	89.51	91.02	7030.71	113.63	8415.07	1.50	-91.34	8408.12	
12	21622.80	89.51	91.02	7082.00	7.81	14366.62	0.00	0.00	14360.22	
CASING DETAILS					FORMATION TOP DETAILS					
TVD	MD	Name	Size		TVDPath	MDPath			Formation	
1500.00	1507.86	9 5/8"	9-5/8		707.00	707.01			Fox Hills	
7082.00	21622.80	5.5" CSG	5-1/2		3598.00	3647.18			Parkman	
					4080.00	4138.68			Sussex	
ELEVATION					6841.00	7006.29			Sharon Springs	
					6871.00	7062.28			Niobrara	
GROUND ELEVATION: 4825.00					7023.00	14666.20			Nio B	
RKB = 17' @ 4842ft					7055.00	18489.15			Nio C	
FOOTAGE CALLOUTS										
SHL				LP				BHL		



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 4-4HZ
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 4-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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 "	Grid Convergence: 0.07 °

Well	SWARTZ 4-4HZ			
Well Position	+N/-S	-35.26 usft	Northing:	14,621,564.61 usft
	+E/-W	-27.93 usft	Easting:	1,670,677.40 usft
Position Uncertainty	3.28 usft	Wellhead Elevation:		Ground Level: 4,825.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/26/2021	7.79	66.61	51,800.49927241

Design	Permit Rev-2			
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	91.68

Plan Survey Tool Program	Date	1/26/2022		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	2,000.00	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD Fixed:v2:standard declination
2	2,000.00	21,621.80	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWD+II 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 4-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,352.00	11.28	309.10	1,347.15	46.53	-57.26	1.50	1.50	0.00	309.10	
4,153.00	11.28	309.10	4,094.04	392.07	-482.45	0.00	0.00	0.00	0.00	
4,717.00	0.00	0.00	4,654.41	426.97	-525.39	2.00	-2.00	0.00	180.00	
6,314.42	0.00	0.00	6,251.83	426.97	-525.39	0.00	0.00	0.00	0.00	
7,433.97	89.56	91.68	6,968.01	406.19	185.05	8.00	8.00	8.19	91.68	
13,900.00	89.56	91.68	7,017.18	217.09	6,648.13	0.00	0.00	0.00	0.00	
14,023.96	89.56	93.54	7,018.12	211.46	6,771.95	1.50	0.00	1.50	89.99	
15,502.26	89.56	93.54	7,029.35	120.30	8,247.40	0.00	0.00	0.00	0.00	
15,670.08	89.51	91.02	7,030.71	113.63	8,415.07	1.50	-0.03	-1.50	-91.34	
21,622.80	89.51	91.02	7,082.00	7.81	14,366.62	0.00	0.00	0.00	0.00	SWARTZ 4-4HZ ADJ

Corporate
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 4-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 600.00ft									
700.00	1.50	309.10	699.99	0.83	-1.02	-1.04	1.50	1.50	0.00
707.01	1.61	309.10	707.00	0.95	-1.16	-1.19	1.50	1.50	0.00
Fox Hills									
800.00	3.00	309.10	799.91	3.30	-4.06	-4.16	1.50	1.50	0.00
900.00	4.50	309.10	899.69	7.43	-9.14	-9.35	1.50	1.50	0.00
1,000.00	6.00	309.10	999.27	13.20	-16.24	-16.62	1.50	1.50	0.00
1,100.00	7.50	309.10	1,098.57	20.61	-25.36	-25.95	1.50	1.50	0.00
1,200.00	9.00	309.10	1,197.54	29.66	-36.50	-37.35	1.50	1.50	0.00
1,300.00	10.50	309.10	1,296.09	40.34	-49.64	-50.80	1.50	1.50	0.00
1,352.00	11.28	309.10	1,347.15	46.53	-57.26	-58.60	1.50	1.50	0.00
Hold Tangent @ 1352.00ft									
1,400.00	11.28	309.10	1,394.22	52.46	-64.55	-66.06	0.00	0.00	0.00
1,500.00	11.28	309.10	1,492.29	64.79	-79.73	-81.59	0.00	0.00	0.00
1,507.86	11.28	309.10	1,500.00	65.76	-80.92	-82.81	0.00	0.00	0.00
9 5/8"									
1,600.00	11.28	309.10	1,590.36	77.13	-94.91	-97.13	0.00	0.00	0.00
1,700.00	11.28	309.10	1,688.43	89.46	-110.09	-112.66	0.00	0.00	0.00
1,800.00	11.28	309.10	1,786.50	101.80	-125.27	-128.20	0.00	0.00	0.00
1,900.00	11.28	309.10	1,884.57	114.14	-140.45	-143.73	0.00	0.00	0.00
2,000.00	11.28	309.10	1,982.63	126.47	-155.63	-159.27	0.00	0.00	0.00
2,100.00	11.28	309.10	2,080.70	138.81	-170.81	-174.80	0.00	0.00	0.00
2,200.00	11.28	309.10	2,178.77	151.15	-185.99	-190.34	0.00	0.00	0.00
2,300.00	11.28	309.10	2,276.84	163.48	-201.17	-205.87	0.00	0.00	0.00
2,400.00	11.28	309.10	2,374.91	175.82	-216.34	-221.41	0.00	0.00	0.00
2,500.00	11.28	309.10	2,472.98	188.16	-231.52	-236.94	0.00	0.00	0.00
2,600.00	11.28	309.10	2,571.04	200.49	-246.70	-252.48	0.00	0.00	0.00
2,700.00	11.28	309.10	2,669.11	212.83	-261.88	-268.01	0.00	0.00	0.00
2,800.00	11.28	309.10	2,767.18	225.16	-277.06	-283.55	0.00	0.00	0.00
2,900.00	11.28	309.10	2,865.25	237.50	-292.24	-299.08	0.00	0.00	0.00
3,000.00	11.28	309.10	2,963.32	249.84	-307.42	-314.62	0.00	0.00	0.00
3,100.00	11.28	309.10	3,061.39	262.17	-322.60	-330.15	0.00	0.00	0.00
3,200.00	11.28	309.10	3,159.45	274.51	-337.78	-345.69	0.00	0.00	0.00
3,300.00	11.28	309.10	3,257.52	286.85	-352.96	-361.22	0.00	0.00	0.00
3,400.00	11.28	309.10	3,355.59	299.18	-368.14	-376.76	0.00	0.00	0.00
3,500.00	11.28	309.10	3,453.66	311.52	-383.32	-392.29	0.00	0.00	0.00
3,600.00	11.28	309.10	3,551.73	323.85	-398.50	-407.83	0.00	0.00	0.00
3,647.18	11.28	309.10	3,598.00	329.67	-405.66	-415.16	0.00	0.00	0.00
Parkman									
3,700.00	11.28	309.10	3,649.80	336.19	-413.68	-423.36	0.00	0.00	0.00
3,800.00	11.28	309.10	3,747.86	348.53	-428.86	-438.90	0.00	0.00	0.00
3,900.00	11.28	309.10	3,845.93	360.86	-444.04	-454.43	0.00	0.00	0.00
4,000.00	11.28	309.10	3,944.00	373.20	-459.22	-469.96	0.00	0.00	0.00
4,100.00	11.28	309.10	4,042.07	385.54	-474.40	-485.50	0.00	0.00	0.00
4,138.68	11.28	309.10	4,080.00	390.31	-480.27	-491.51	0.00	0.00	0.00
Sussex									

Corporate
Planning Report

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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 4-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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)
4,153.00	11.28	309.10	4,094.04	392.07	-482.45	-493.73	0.00	0.00	0.00
Begin Drop @ 4153.00ft									
4,200.00	10.34	309.10	4,140.21	397.63	-489.29	-500.73	2.00	-2.00	0.00
4,300.00	8.34	309.10	4,238.88	407.87	-501.88	-513.62	2.00	-2.00	0.00
4,400.00	6.34	309.10	4,338.05	415.92	-511.80	-523.77	2.00	-2.00	0.00
4,500.00	4.34	309.10	4,437.62	421.79	-519.02	-531.16	2.00	-2.00	0.00
4,600.00	2.34	309.10	4,537.44	425.47	-523.54	-535.79	2.00	-2.00	0.00
4,700.00	0.34	309.10	4,637.41	426.94	-525.35	-537.64	2.00	-2.00	0.00
4,717.00	0.00	0.00	4,654.41	426.97	-525.39	-537.68	2.00	-2.00	0.00
Hold Vertical @ 4717.00ft									
4,800.00	0.00	0.00	4,737.41	426.97	-525.39	-537.68	0.00	0.00	0.00
4,900.00	0.00	0.00	4,837.41	426.97	-525.39	-537.68	0.00	0.00	0.00
5,000.00	0.00	0.00	4,937.41	426.97	-525.39	-537.68	0.00	0.00	0.00
5,100.00	0.00	0.00	5,037.41	426.97	-525.39	-537.68	0.00	0.00	0.00
5,200.00	0.00	0.00	5,137.41	426.97	-525.39	-537.68	0.00	0.00	0.00
5,300.00	0.00	0.00	5,237.41	426.97	-525.39	-537.68	0.00	0.00	0.00
5,400.00	0.00	0.00	5,337.41	426.97	-525.39	-537.68	0.00	0.00	0.00
5,500.00	0.00	0.00	5,437.41	426.97	-525.39	-537.68	0.00	0.00	0.00
5,600.00	0.00	0.00	5,537.41	426.97	-525.39	-537.68	0.00	0.00	0.00
5,700.00	0.00	0.00	5,637.41	426.97	-525.39	-537.68	0.00	0.00	0.00
5,800.00	0.00	0.00	5,737.41	426.97	-525.39	-537.68	0.00	0.00	0.00
5,900.00	0.00	0.00	5,837.41	426.97	-525.39	-537.68	0.00	0.00	0.00
6,000.00	0.00	0.00	5,937.41	426.97	-525.39	-537.68	0.00	0.00	0.00
6,100.00	0.00	0.00	6,037.41	426.97	-525.39	-537.68	0.00	0.00	0.00
6,200.00	0.00	0.00	6,137.41	426.97	-525.39	-537.68	0.00	0.00	0.00
6,300.00	0.00	0.00	6,237.41	426.97	-525.39	-537.68	0.00	0.00	0.00
6,314.42	0.00	0.00	6,251.83	426.97	-525.39	-537.68	0.00	0.00	0.00
KOP @ 6314.42ft :: DLS = 8°/100'									
6,400.00	6.85	91.68	6,337.21	426.83	-520.29	-532.58	8.00	8.00	0.00
6,500.00	14.85	91.68	6,435.34	426.28	-501.49	-513.77	8.00	8.00	0.00
6,600.00	22.85	91.68	6,529.90	425.33	-469.23	-481.50	8.00	8.00	0.00
6,700.00	30.85	91.68	6,619.05	424.01	-424.13	-436.37	8.00	8.00	0.00
6,800.00	38.85	91.68	6,701.05	422.34	-367.06	-379.28	8.00	8.00	0.00
6,900.00	46.85	91.68	6,774.31	420.35	-299.14	-311.33	8.00	8.00	0.00
7,000.00	54.85	91.68	6,837.40	418.09	-221.69	-233.85	8.00	8.00	0.00
7,006.29	55.35	91.68	6,841.00	417.94	-216.53	-228.69	8.00	8.00	0.00
Sharon Springs									
7,062.28	59.83	91.68	6,871.00	416.56	-169.30	-181.44	8.00	8.00	0.00
Niobrara									
7,100.00	62.85	91.68	6,889.09	415.59	-136.22	-148.34	8.00	8.00	0.00
7,200.00	70.85	91.68	6,928.38	412.90	-44.39	-56.47	8.00	8.00	0.00
7,300.00	78.85	91.68	6,954.50	410.08	52.02	39.97	8.00	8.00	0.00
7,400.00	86.85	91.68	6,966.94	407.18	151.12	139.11	8.00	8.00	0.00
7,433.97	89.56	91.68	6,968.01	406.19	185.05	173.07	8.00	8.00	0.00
End Build @ 7433.97ft									
7,500.00	89.56	91.68	6,968.51	404.26	251.05	239.09	0.00	0.00	0.00
7,600.00	89.56	91.68	6,969.27	401.33	351.01	339.09	0.00	0.00	0.00
7,700.00	89.56	91.68	6,970.03	398.41	450.96	439.09	0.00	0.00	0.00
7,800.00	89.56	91.68	6,970.79	395.48	550.91	539.08	0.00	0.00	0.00
7,900.00	89.56	91.68	6,971.55	392.56	650.87	639.08	0.00	0.00	0.00
8,000.00	89.56	91.68	6,972.31	389.63	750.82	739.08	0.00	0.00	0.00
8,100.00	89.56	91.68	6,973.07	386.71	850.78	839.07	0.00	0.00	0.00
8,200.00	89.56	91.68	6,973.83	383.79	950.73	939.07	0.00	0.00	0.00

Corporate 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 4-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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)	
8,300.00	89.56	91.68	6,974.59	380.86	1,050.69	1,039.07	0.00	0.00	0.00	
8,400.00	89.56	91.68	6,975.35	377.94	1,150.64	1,139.07	0.00	0.00	0.00	
8,500.00	89.56	91.68	6,976.11	375.01	1,250.59	1,239.06	0.00	0.00	0.00	
8,600.00	89.56	91.68	6,976.87	372.09	1,350.55	1,339.06	0.00	0.00	0.00	
8,700.00	89.56	91.68	6,977.63	369.16	1,450.50	1,439.06	0.00	0.00	0.00	
8,800.00	89.56	91.68	6,978.39	366.24	1,550.46	1,539.05	0.00	0.00	0.00	
8,900.00	89.56	91.68	6,979.15	363.31	1,650.41	1,639.05	0.00	0.00	0.00	
9,000.00	89.56	91.68	6,979.91	360.39	1,750.37	1,739.05	0.00	0.00	0.00	
9,100.00	89.56	91.68	6,980.68	357.47	1,850.32	1,839.05	0.00	0.00	0.00	
9,200.00	89.56	91.68	6,981.44	354.54	1,950.27	1,939.04	0.00	0.00	0.00	
9,300.00	89.56	91.68	6,982.20	351.62	2,050.23	2,039.04	0.00	0.00	0.00	
9,400.00	89.56	91.68	6,982.96	348.69	2,150.18	2,139.04	0.00	0.00	0.00	
9,500.00	89.56	91.68	6,983.72	345.77	2,250.14	2,239.03	0.00	0.00	0.00	
9,600.00	89.56	91.68	6,984.48	342.84	2,350.09	2,339.03	0.00	0.00	0.00	
9,700.00	89.56	91.68	6,985.24	339.92	2,450.05	2,439.03	0.00	0.00	0.00	
9,800.00	89.56	91.68	6,986.00	336.99	2,550.00	2,539.03	0.00	0.00	0.00	
9,900.00	89.56	91.68	6,986.76	334.07	2,649.96	2,639.02	0.00	0.00	0.00	
10,000.00	89.56	91.68	6,987.52	331.14	2,749.91	2,739.02	0.00	0.00	0.00	
10,100.00	89.56	91.68	6,988.28	328.22	2,849.86	2,839.02	0.00	0.00	0.00	
10,200.00	89.56	91.68	6,989.04	325.30	2,949.82	2,939.01	0.00	0.00	0.00	
10,300.00	89.56	91.68	6,989.80	322.37	3,049.77	3,039.01	0.00	0.00	0.00	
10,400.00	89.56	91.68	6,990.56	319.45	3,149.73	3,139.01	0.00	0.00	0.00	
10,500.00	89.56	91.68	6,991.32	316.52	3,249.68	3,239.00	0.00	0.00	0.00	
10,600.00	89.56	91.68	6,992.08	313.60	3,349.64	3,339.00	0.00	0.00	0.00	
10,700.00	89.56	91.68	6,992.84	310.67	3,449.59	3,439.00	0.00	0.00	0.00	
10,800.00	89.56	91.68	6,993.60	307.75	3,549.54	3,539.00	0.00	0.00	0.00	
10,900.00	89.56	91.68	6,994.36	304.82	3,649.50	3,638.99	0.00	0.00	0.00	
11,000.00	89.56	91.68	6,995.13	301.90	3,749.45	3,738.99	0.00	0.00	0.00	
11,100.00	89.56	91.68	6,995.89	298.98	3,849.41	3,838.99	0.00	0.00	0.00	
11,200.00	89.56	91.68	6,996.65	296.05	3,949.36	3,938.98	0.00	0.00	0.00	
11,300.00	89.56	91.68	6,997.41	293.13	4,049.32	4,038.98	0.00	0.00	0.00	
11,400.00	89.56	91.68	6,998.17	290.20	4,149.27	4,138.98	0.00	0.00	0.00	
11,500.00	89.56	91.68	6,998.93	287.28	4,249.22	4,238.98	0.00	0.00	0.00	
11,600.00	89.56	91.68	6,999.69	284.35	4,349.18	4,338.97	0.00	0.00	0.00	
11,700.00	89.56	91.68	7,000.45	281.43	4,449.13	4,438.97	0.00	0.00	0.00	
11,800.00	89.56	91.68	7,001.21	278.50	4,549.09	4,538.97	0.00	0.00	0.00	
11,900.00	89.56	91.68	7,001.97	275.58	4,649.04	4,638.96	0.00	0.00	0.00	
12,000.00	89.56	91.68	7,002.73	272.66	4,749.00	4,738.96	0.00	0.00	0.00	
12,100.00	89.56	91.68	7,003.49	269.73	4,848.95	4,838.96	0.00	0.00	0.00	
12,200.00	89.56	91.68	7,004.25	266.81	4,948.91	4,938.96	0.00	0.00	0.00	
12,300.00	89.56	91.68	7,005.01	263.88	5,048.86	5,038.95	0.00	0.00	0.00	
12,400.00	89.56	91.68	7,005.77	260.96	5,148.81	5,138.95	0.00	0.00	0.00	
12,500.00	89.56	91.68	7,006.53	258.03	5,248.77	5,238.95	0.00	0.00	0.00	
12,600.00	89.56	91.68	7,007.29	255.11	5,348.72	5,338.94	0.00	0.00	0.00	
12,700.00	89.56	91.68	7,008.05	252.18	5,448.68	5,438.94	0.00	0.00	0.00	
12,800.00	89.56	91.68	7,008.81	249.26	5,548.63	5,538.94	0.00	0.00	0.00	
12,900.00	89.56	91.68	7,009.58	246.33	5,648.59	5,638.94	0.00	0.00	0.00	
13,000.00	89.56	91.68	7,010.34	243.41	5,748.54	5,738.93	0.00	0.00	0.00	
13,100.00	89.56	91.68	7,011.10	240.49	5,848.49	5,838.93	0.00	0.00	0.00	
13,200.00	89.56	91.68	7,011.86	237.56	5,948.45	5,938.93	0.00	0.00	0.00	
13,300.00	89.56	91.68	7,012.62	234.64	6,048.40	6,038.92	0.00	0.00	0.00	
13,400.00	89.56	91.68	7,013.38	231.71	6,148.36	6,138.92	0.00	0.00	0.00	
13,500.00	89.56	91.68	7,014.14	228.79	6,248.31	6,238.92	0.00	0.00	0.00	
13,600.00	89.56	91.68	7,014.90	225.86	6,348.27	6,338.92	0.00	0.00	0.00	

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 4-4HZ
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 4-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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)
13,700.00	89.56	91.68	7,015.66	222.94	6,448.22	6,438.91	0.00	0.00	0.00
13,800.00	89.56	91.68	7,016.42	220.01	6,548.17	6,538.91	0.00	0.00	0.00
13,900.00	89.56	91.68	7,017.18	217.09	6,648.13	6,638.91	0.00	0.00	0.00
Begin Turn @ 13900.00ft									
14,000.00	89.56	93.18	7,017.94	212.86	6,748.03	6,738.89	1.50	0.00	1.50
14,023.96	89.56	93.54	7,018.12	211.46	6,771.95	6,762.84	1.50	0.00	1.50
End Turn @ 14023.96ft									
14,100.00	89.56	93.54	7,018.70	206.77	6,847.84	6,838.84	0.00	0.00	0.00
14,200.00	89.56	93.54	7,019.46	200.60	6,947.65	6,938.78	0.00	0.00	0.00
14,300.00	89.56	93.54	7,020.22	194.43	7,047.46	7,038.73	0.00	0.00	0.00
14,400.00	89.56	93.54	7,020.98	188.27	7,147.27	7,138.67	0.00	0.00	0.00
14,500.00	89.56	93.54	7,021.74	182.10	7,247.07	7,238.62	0.00	0.00	0.00
14,600.00	89.56	93.54	7,022.50	175.94	7,346.88	7,338.56	0.00	0.00	0.00
14,666.20	89.56	93.54	7,023.00	171.85	7,412.95	7,404.72	0.00	0.00	0.00
Nio B									
14,700.00	89.56	93.54	7,023.26	169.77	7,446.69	7,438.51	0.00	0.00	0.00
14,800.00	89.56	93.54	7,024.02	163.60	7,546.49	7,538.45	0.00	0.00	0.00
14,900.00	89.56	93.54	7,024.78	157.44	7,646.30	7,638.40	0.00	0.00	0.00
15,000.00	89.56	93.54	7,025.54	151.27	7,746.11	7,738.34	0.00	0.00	0.00
15,100.00	89.56	93.54	7,026.29	145.10	7,845.91	7,838.29	0.00	0.00	0.00
15,200.00	89.56	93.54	7,027.05	138.94	7,945.72	7,938.23	0.00	0.00	0.00
15,300.00	89.56	93.54	7,027.81	132.77	8,045.53	8,038.18	0.00	0.00	0.00
15,400.00	89.56	93.54	7,028.57	126.61	8,145.33	8,138.12	0.00	0.00	0.00
15,500.00	89.56	93.54	7,029.33	120.44	8,245.14	8,238.07	0.00	0.00	0.00
15,502.26	89.56	93.54	7,029.35	120.30	8,247.40	8,240.33	0.00	0.00	0.00
Begin Turn to BHL @ 15502.26ft									
15,600.00	89.53	92.07	7,030.12	115.52	8,345.01	8,338.04	1.50	-0.03	-1.50
15,655.50	89.51	91.24	7,030.59	113.92	8,400.49	8,393.54	1.50	-0.03	-1.50
End Turn @ 15655.50ft									
15,670.08	89.51	91.02	7,030.71	113.63	8,415.07	8,408.12	1.50	-0.03	-1.50
15,700.00	89.51	91.02	7,030.97	113.10	8,444.98	8,438.03	0.00	0.00	0.00
15,800.00	89.51	91.02	7,031.83	111.32	8,544.96	8,538.02	0.00	0.00	0.00
15,900.00	89.51	91.02	7,032.69	109.55	8,644.94	8,638.01	0.00	0.00	0.00
16,000.00	89.51	91.02	7,033.55	107.77	8,744.92	8,738.00	0.00	0.00	0.00
16,100.00	89.51	91.02	7,034.41	105.99	8,844.90	8,837.99	0.00	0.00	0.00
16,200.00	89.51	91.02	7,035.28	104.21	8,944.88	8,937.98	0.00	0.00	0.00
16,300.00	89.51	91.02	7,036.14	102.44	9,044.86	9,037.97	0.00	0.00	0.00
16,400.00	89.51	91.02	7,037.00	100.66	9,144.84	9,137.96	0.00	0.00	0.00
16,500.00	89.51	91.02	7,037.86	98.88	9,244.82	9,237.95	0.00	0.00	0.00
16,600.00	89.51	91.02	7,038.72	97.10	9,344.80	9,337.94	0.00	0.00	0.00
16,700.00	89.51	91.02	7,039.58	95.32	9,444.78	9,437.93	0.00	0.00	0.00
16,800.00	89.51	91.02	7,040.45	93.55	9,544.76	9,537.92	0.00	0.00	0.00
16,900.00	89.51	91.02	7,041.31	91.77	9,644.74	9,637.91	0.00	0.00	0.00
17,000.00	89.51	91.02	7,042.17	89.99	9,744.72	9,737.90	0.00	0.00	0.00
17,100.00	89.51	91.02	7,043.03	88.21	9,844.71	9,837.89	0.00	0.00	0.00
17,200.00	89.51	91.02	7,043.89	86.44	9,944.69	9,937.88	0.00	0.00	0.00
17,300.00	89.51	91.02	7,044.75	84.66	10,044.67	10,037.87	0.00	0.00	0.00
17,400.00	89.51	91.02	7,045.62	82.88	10,144.65	10,137.86	0.00	0.00	0.00
17,500.00	89.51	91.02	7,046.48	81.10	10,244.63	10,237.85	0.00	0.00	0.00
17,600.00	89.51	91.02	7,047.34	79.33	10,344.61	10,337.84	0.00	0.00	0.00
17,700.00	89.51	91.02	7,048.20	77.55	10,444.59	10,437.83	0.00	0.00	0.00
17,800.00	89.51	91.02	7,049.06	75.77	10,544.57	10,537.81	0.00	0.00	0.00
17,900.00	89.51	91.02	7,049.92	73.99	10,644.55	10,637.80	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 4-4HZ
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 4-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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)
18,000.00	89.51	91.02	7,050.79	72.21	10,744.53	10,737.79	0.00	0.00	0.00
18,100.00	89.51	91.02	7,051.65	70.44	10,844.51	10,837.78	0.00	0.00	0.00
18,200.00	89.51	91.02	7,052.51	68.66	10,944.49	10,937.77	0.00	0.00	0.00
18,300.00	89.51	91.02	7,053.37	66.88	11,044.47	11,037.76	0.00	0.00	0.00
18,400.00	89.51	91.02	7,054.23	65.10	11,144.45	11,137.75	0.00	0.00	0.00
18,489.15	89.51	91.02	7,055.00	63.52	11,233.58	11,226.89	0.00	0.00	0.00
Nio C									
18,500.00	89.51	91.02	7,055.09	63.33	11,244.43	11,237.74	0.00	0.00	0.00
18,600.00	89.51	91.02	7,055.96	61.55	11,344.41	11,337.73	0.00	0.00	0.00
18,700.00	89.51	91.02	7,056.82	59.77	11,444.39	11,437.72	0.00	0.00	0.00
18,800.00	89.51	91.02	7,057.68	57.99	11,544.37	11,537.71	0.00	0.00	0.00
18,900.00	89.51	91.02	7,058.54	56.22	11,644.35	11,637.70	0.00	0.00	0.00
19,000.00	89.51	91.02	7,059.40	54.44	11,744.33	11,737.69	0.00	0.00	0.00
19,100.00	89.51	91.02	7,060.26	52.66	11,844.32	11,837.68	0.00	0.00	0.00
19,200.00	89.51	91.02	7,061.12	50.88	11,944.30	11,937.67	0.00	0.00	0.00
19,300.00	89.51	91.02	7,061.99	49.10	12,044.28	12,037.66	0.00	0.00	0.00
19,400.00	89.51	91.02	7,062.85	47.33	12,144.26	12,137.65	0.00	0.00	0.00
19,500.00	89.51	91.02	7,063.71	45.55	12,244.24	12,237.64	0.00	0.00	0.00
19,600.00	89.51	91.02	7,064.57	43.77	12,344.22	12,337.63	0.00	0.00	0.00
19,700.00	89.51	91.02	7,065.43	41.99	12,444.20	12,437.62	0.00	0.00	0.00
19,800.00	89.51	91.02	7,066.29	40.22	12,544.18	12,537.61	0.00	0.00	0.00
19,900.00	89.51	91.02	7,067.16	38.44	12,644.16	12,637.60	0.00	0.00	0.00
20,000.00	89.51	91.02	7,068.02	36.66	12,744.14	12,737.59	0.00	0.00	0.00
20,100.00	89.51	91.02	7,068.88	34.88	12,844.12	12,837.58	0.00	0.00	0.00
20,200.00	89.51	91.02	7,069.74	33.11	12,944.10	12,937.57	0.00	0.00	0.00
20,300.00	89.51	91.02	7,070.60	31.33	13,044.08	13,037.56	0.00	0.00	0.00
20,400.00	89.51	91.02	7,071.46	29.55	13,144.06	13,137.55	0.00	0.00	0.00
20,500.00	89.51	91.02	7,072.33	27.77	13,244.04	13,237.53	0.00	0.00	0.00
20,600.00	89.51	91.02	7,073.19	25.99	13,344.02	13,337.52	0.00	0.00	0.00
20,700.00	89.51	91.02	7,074.05	24.22	13,444.00	13,437.51	0.00	0.00	0.00
20,800.00	89.51	91.02	7,074.91	22.44	13,543.98	13,537.50	0.00	0.00	0.00
20,900.00	89.51	91.02	7,075.77	20.66	13,643.96	13,637.49	0.00	0.00	0.00
21,000.00	89.51	91.02	7,076.63	18.88	13,743.94	13,737.48	0.00	0.00	0.00
21,100.00	89.51	91.02	7,077.50	17.11	13,843.92	13,837.47	0.00	0.00	0.00
21,200.00	89.51	91.02	7,078.36	15.33	13,943.91	13,937.46	0.00	0.00	0.00
21,300.00	89.51	91.02	7,079.22	13.55	14,043.89	14,037.45	0.00	0.00	0.00
21,400.00	89.51	91.02	7,080.08	11.77	14,143.87	14,137.44	0.00	0.00	0.00
21,500.00	89.51	91.02	7,080.94	10.00	14,243.85	14,237.43	0.00	0.00	0.00
21,600.00	89.51	91.02	7,081.80	8.22	14,343.83	14,337.42	0.00	0.00	0.00
21,622.80	89.51	91.02	7,082.00	7.81	14,366.62	14,360.22	0.00	0.00	0.00
TD Well @ 21622.80ft									

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 4-4HZ
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 4-4HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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 4-4HZ LP - plan hits target center - Point	0.00	0.00	6,968.01	406.19	185.05	14,621,971.02	1,670,861.95	40.261483	-104.890869
SWARTZ 4-4HZ KOP - plan hits target center - Point	0.00	0.00	6,251.83	426.97	-525.39	14,621,990.94	1,670,151.48	40.261541	-104.893416
SWARTZ 4-4HZ ADJ BH - plan hits target center - Point	0.00	0.00	7,082.00	7.81	14,366.62	14,621,590.00	1,685,044.00	40.260378	-104.840037

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,507.86	1,500.00	9 5/8"	9-5/8	13-1/2	
21,622.80	7,082.00	5.5" CSG	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
707.01	707.00	Fox Hills				
3,647.18	3,598.00	Parkman				
4,138.68	4,080.00	Sussex				
7,006.29	6,841.00	Sharon Springs				
7,062.28	6,871.00	Niobrara				
14,666.20	7,023.00	Nio B				
18,489.15	7,055.00	Nio C				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
600.00	600.00	0.00	0.00	Begin Nudge @ 600.00ft	
1,352.00	1,347.15	46.53	-57.26	Hold Tangent @ 1352.00ft	
4,153.00	4,094.04	392.07	-482.45	Begin Drop @ 4153.00ft	
4,717.00	4,654.41	426.97	-525.39	Hold Vertical @ 4717.00ft	
6,314.42	6,251.83	426.97	-525.39	KOP @ 6314.42ft :: DLS = 8°/100'	
7,433.97	6,968.01	406.19	185.05	End Build @ 7433.97ft	
13,900.00	7,017.18	217.09	6,648.13	Begin Turn @ 13900.00ft	
14,023.96	7,018.12	211.46	6,771.95	End Turn @ 14023.96ft	
15,502.26	7,029.35	120.30	8,247.40	Begin Turn to BHL @ 15502.26ft	
15,655.50	7,030.59	113.92	8,400.49	End Turn @ 15655.50ft	
21,622.80	7,082.00	7.81	14,366.62	TD Well @ 21622.80ft	