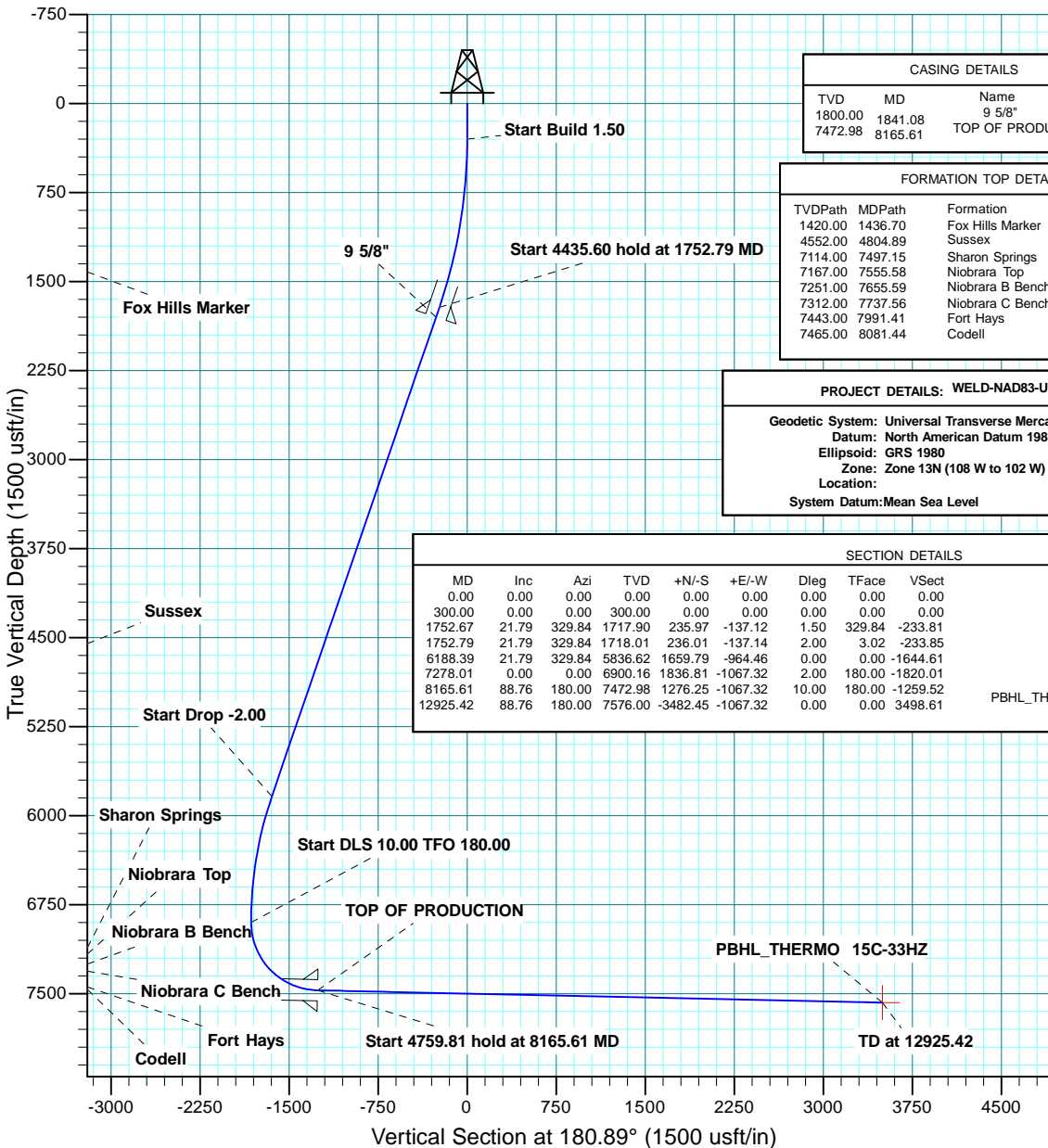


SHL: THERMO 15C-33HZ								
GL 4984 & KB 17 @ 5001.00usft (ASSUMED)								
	+N/-S 0.00	+E/-W 0.00	Northing 14562570.18	Easting 1702780.74	Latitude 40.098199	Longitude -104.776992		
DESIGN TARGET DETAILS								
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7576.00	-3482.45	-1067.32	14559085.06	1701722.16	40.088636	-104.780808	Point
- plan hits target center								

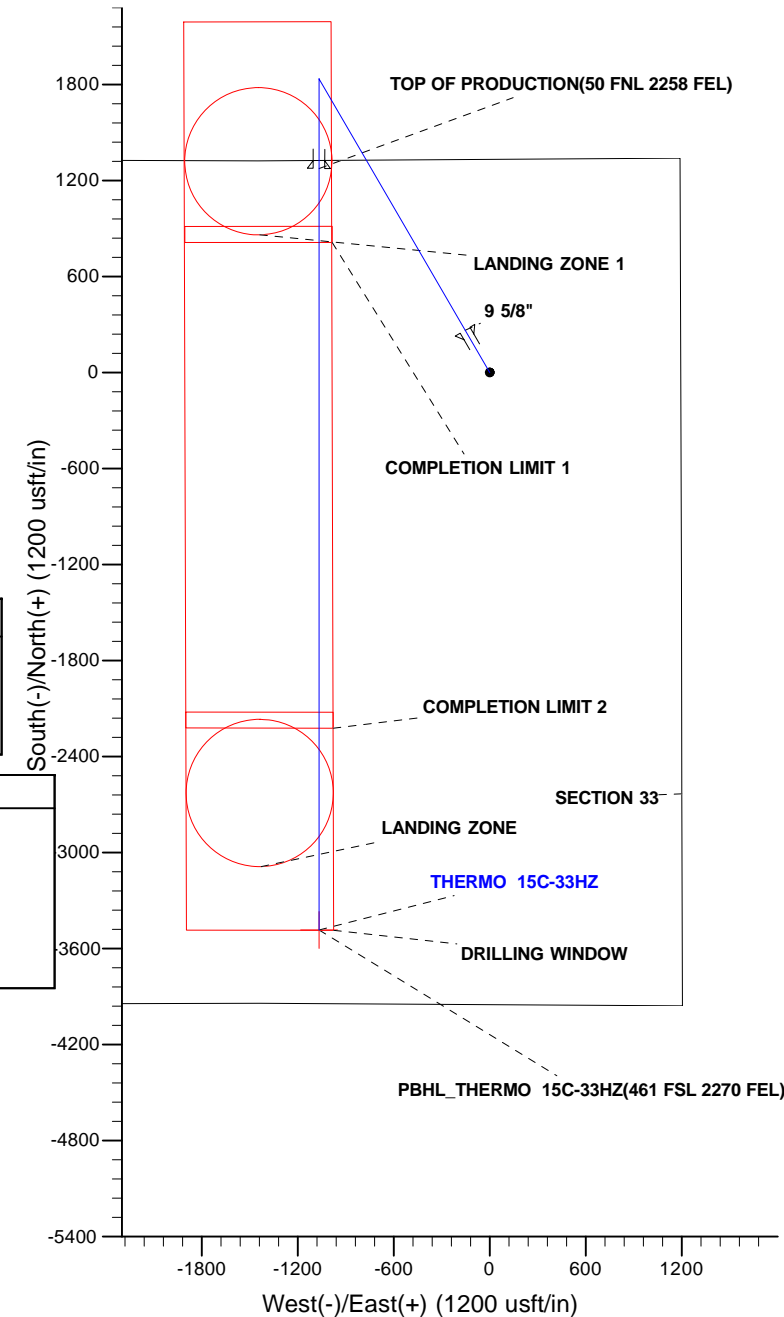


CASING DETAILS			
TVD	MD	Name	Size
1800.00	1841.08	9 5/8"	9.625
7472.98	8165.61	TOP OF PRODUCTION	5.500

FORMATION TOP DETAILS			
TVDPath	MDPath	Formation	Inc
1420.00	1436.70	Fox Hills Marker	17.05
4552.00	4804.89	Sussex	21.79
7114.00	7497.15	Sharon Springs	21.91
7167.00	7555.58	Niobrara Top	27.76
7251.00	7655.59	Niobrara B Bench	37.76
7312.00	7737.56	Niobrara C Bench	45.96
7443.00	7991.41	Fort Hays	71.34
7465.00	8081.44	Codell	80.34

PROJECT DETAILS: WELD-NAD83-UTMFT13N	
Geodetic System: Universal Transverse Mercator (US Survey Feet)	
Datum: North American Datum 1983	
Ellipsoid: GRS 1980	
Zone: Zone 13N (108 W to 102 W)	
Location:	
System Datum: Mean Sea Level	

SECTION DETAILS										
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace		
0.00	0.00	0.00	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		
1752.67	21.79	329.84	1717.90	235.97	-137.12	1.50	329.84	-233.81		
1752.79	21.79	329.84	1718.01	236.01	-137.14	2.00	3.02	-233.85		
6188.39	21.79	329.84	5836.62	1659.79	-964.46	0.00	0.00	-1644.61		
7278.01	0.00	0.00	6900.16	1836.81	-1067.32	2.00	180.00	-1820.01		
8165.61	88.76	180.00	7472.98	1276.25	-1067.32	10.00	180.00	-1259.52		
12925.42	88.76	180.00	7576.00	-3482.45	-1067.32	0.00	0.00	3498.61		



US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

2N-66W-33 THERMO 37N-33HZ PAD

THERMO 15C-33HZ

PLAN A

Plan: PERMIT REV-3

Standard Planning Report

08 June, 2015

Database:	Denver Sales	Local Co-ordinate Reference:	Well THERMO 15C-33HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	GL 4984 & KB 17 @ 5001.00usft (ASSUMED)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	GL 4984 & KB 17 @ 5001.00usft (ASSUMED)
Site:	2N-66W-33 THERMO 37N-33HZ PAD	North Reference:	True
Well:	THERMO 15C-33HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLAN A		
Design:	PERMIT REV-3		

Project	WELD-NAD83-UTMFT13N		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Zone 13N (108 W to 102 W)		

Site	2N-66W-33 THERMO 37N-33HZ PAD		
Site Position:		Northing:	14,562,570.50 usft
From:	Lat/Long	Easting:	1,702,765.64 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in
		Latitude:	40.098200
		Longitude:	-104.777046
		Grid Convergence:	0.14 °

Well	THERMO 15C-33HZ		
Well Position	+N/-S	-0.36 usft	Northing: 14,562,570.17 usft
	+E/-W	15.10 usft	Easting: 1,702,780.74 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	40.098199
		Longitude:	-104.776992
		Ground Level:	4,984.00 usft

Wellbore	PLAN A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/22/2015	8.36	66.68	52,591

Design	PERMIT REV-3			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	180.89

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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,752.67	21.79	329.84	1,717.90	235.97	-137.12	1.50	1.50	0.00	329.84	
1,752.79	21.79	329.84	1,718.01	236.01	-137.14	2.00	2.00	0.28	3.02	
6,188.39	21.79	329.84	5,836.62	1,659.79	-964.46	0.00	0.00	0.00	0.00	
7,278.01	0.00	0.00	6,900.16	1,836.81	-1,067.32	2.00	-2.00	0.00	180.00	
8,165.61	88.76	180.00	7,472.98	1,276.25	-1,067.32	10.00	10.00	-20.28	180.00	
12,925.42	88.76	180.00	7,576.00	-3,482.45	-1,067.32	0.00	0.00	0.00	0.00	PBHL_THERMO 15C

Database:	Denver Sales	Local Co-ordinate Reference:	Well THERMO 15C-33HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	GL 4984 & KB 17 @ 5001.00usft (ASSUMED)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	GL 4984 & KB 17 @ 5001.00usft (ASSUMED)
Site:	2N-66W-33 THERMO 37N-33HZ PAD	North Reference:	True
Well:	THERMO 15C-33HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLAN A		
Design:	PERMIT REV-3		

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
Start Build 1.50									
400.00	1.50	329.84	399.99	1.13	-0.66	-1.12	1.50	1.50	0.00
500.00	3.00	329.84	499.91	4.53	-2.63	-4.48	1.50	1.50	0.00
600.00	4.50	329.84	599.69	10.18	-5.92	-10.09	1.50	1.50	0.00
700.00	6.00	329.84	699.27	18.09	-10.51	-17.93	1.50	1.50	0.00
800.00	7.50	329.84	798.57	28.25	-16.42	-28.00	1.50	1.50	0.00
900.00	9.00	329.84	897.54	40.66	-23.63	-40.29	1.50	1.50	0.00
1,000.00	10.50	329.84	996.09	55.30	-32.14	-54.80	1.50	1.50	0.00
1,100.00	12.00	329.84	1,094.16	72.17	-41.94	-71.51	1.50	1.50	0.00
1,200.00	13.50	329.84	1,191.70	91.25	-53.02	-90.42	1.50	1.50	0.00
1,300.00	15.00	329.84	1,288.62	112.53	-65.39	-111.51	1.50	1.50	0.00
1,400.00	16.50	329.84	1,384.86	136.00	-79.03	-134.76	1.50	1.50	0.00
1,436.70	17.05	329.84	1,420.00	145.16	-84.35	-143.83	1.50	1.50	0.00
Fox Hills Marker									
1,500.00	18.00	329.84	1,480.36	161.64	-93.93	-160.16	1.50	1.50	0.00
1,600.00	19.50	329.84	1,575.05	189.43	-110.08	-187.70	1.50	1.50	0.00
1,700.00	21.00	329.84	1,668.86	219.36	-127.47	-217.35	1.50	1.50	0.00
1,752.67	21.79	329.84	1,717.90	235.97	-137.12	-233.81	1.50	1.50	0.00
1,752.79	21.79	329.84	1,718.01	236.01	-137.14	-233.85	2.00	2.00	0.28
Start 4435.60 hold at 1752.79 MD									
1,800.00	21.79	329.84	1,761.85	251.16	-145.95	-248.87	0.00	0.00	0.00
1,841.08	21.79	329.84	1,800.00	264.35	-153.61	-261.93	0.00	0.00	0.00
9 5/8"									
1,900.00	21.79	329.84	1,854.71	283.26	-164.60	-280.67	0.00	0.00	0.00
2,000.00	21.79	329.84	1,947.56	315.36	-183.25	-312.48	0.00	0.00	0.00
2,100.00	21.79	329.84	2,040.41	347.46	-201.90	-344.28	0.00	0.00	0.00
2,200.00	21.79	329.84	2,133.27	379.56	-220.55	-376.09	0.00	0.00	0.00
2,300.00	21.79	329.84	2,226.12	411.66	-239.21	-407.89	0.00	0.00	0.00
2,400.00	21.79	329.84	2,318.97	443.76	-257.86	-439.70	0.00	0.00	0.00
2,500.00	21.79	329.84	2,411.83	475.86	-276.51	-471.50	0.00	0.00	0.00
2,600.00	21.79	329.84	2,504.68	507.96	-295.16	-503.31	0.00	0.00	0.00
2,700.00	21.79	329.84	2,597.53	540.05	-313.81	-535.11	0.00	0.00	0.00
2,800.00	21.79	329.84	2,690.39	572.15	-332.46	-566.92	0.00	0.00	0.00
2,900.00	21.79	329.84	2,783.24	604.25	-351.12	-598.73	0.00	0.00	0.00
3,000.00	21.79	329.84	2,876.09	636.35	-369.77	-630.53	0.00	0.00	0.00
3,100.00	21.79	329.84	2,968.95	668.45	-388.42	-662.34	0.00	0.00	0.00
3,200.00	21.79	329.84	3,061.80	700.55	-407.07	-694.14	0.00	0.00	0.00
3,300.00	21.79	329.84	3,154.65	732.65	-425.72	-725.95	0.00	0.00	0.00
3,400.00	21.79	329.84	3,247.51	764.75	-444.37	-757.75	0.00	0.00	0.00
3,500.00	21.79	329.84	3,340.36	796.85	-463.03	-789.56	0.00	0.00	0.00
3,600.00	21.79	329.84	3,433.22	828.94	-481.68	-821.36	0.00	0.00	0.00
3,700.00	21.79	329.84	3,526.07	861.04	-500.33	-853.17	0.00	0.00	0.00
3,800.00	21.79	329.84	3,618.92	893.14	-518.98	-884.97	0.00	0.00	0.00
3,900.00	21.79	329.84	3,711.78	925.24	-537.63	-916.78	0.00	0.00	0.00
4,000.00	21.79	329.84	3,804.63	957.34	-556.29	-948.58	0.00	0.00	0.00
4,100.00	21.79	329.84	3,897.48	989.44	-574.94	-980.39	0.00	0.00	0.00
4,200.00	21.79	329.84	3,990.34	1,021.54	-593.59	-1,012.20	0.00	0.00	0.00
4,300.00	21.79	329.84	4,083.19	1,053.64	-612.24	-1,044.00	0.00	0.00	0.00

Database:	Denver Sales	Local Co-ordinate Reference:	Well THERMO 15C-33HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	GL 4984 & KB 17 @ 5001.00usft (ASSUMED)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	GL 4984 & KB 17 @ 5001.00usft (ASSUMED)
Site:	2N-66W-33 THERMO 37N-33HZ PAD	North Reference:	True
Well:	THERMO 15C-33HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLAN A		
Design:	PERMIT REV-3		

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)
4,400.00	21.79	329.84	4,176.04	1,085.74	-630.89	-1,075.81	0.00	0.00	0.00
4,500.00	21.79	329.84	4,268.90	1,117.84	-649.54	-1,107.61	0.00	0.00	0.00
4,600.00	21.79	329.84	4,361.75	1,149.93	-668.20	-1,139.42	0.00	0.00	0.00
4,700.00	21.79	329.84	4,454.60	1,182.03	-686.85	-1,171.22	0.00	0.00	0.00
4,800.00	21.79	329.84	4,547.46	1,214.13	-705.50	-1,203.03	0.00	0.00	0.00
4,804.89	21.79	329.84	4,552.00	1,215.70	-706.41	-1,204.58	0.00	0.00	0.00
Sussex									
4,900.00	21.79	329.84	4,640.31	1,246.23	-724.15	-1,234.83	0.00	0.00	0.00
5,000.00	21.79	329.84	4,733.16	1,278.33	-742.80	-1,266.64	0.00	0.00	0.00
5,100.00	21.79	329.84	4,826.02	1,310.43	-761.45	-1,298.44	0.00	0.00	0.00
5,200.00	21.79	329.84	4,918.87	1,342.53	-780.11	-1,330.25	0.00	0.00	0.00
5,300.00	21.79	329.84	5,011.72	1,374.63	-798.76	-1,362.05	0.00	0.00	0.00
5,400.00	21.79	329.84	5,104.58	1,406.73	-817.41	-1,393.86	0.00	0.00	0.00
5,500.00	21.79	329.84	5,197.43	1,438.82	-836.06	-1,425.66	0.00	0.00	0.00
5,600.00	21.79	329.84	5,290.28	1,470.92	-854.71	-1,457.47	0.00	0.00	0.00
5,700.00	21.79	329.84	5,383.14	1,503.02	-873.37	-1,489.28	0.00	0.00	0.00
5,800.00	21.79	329.84	5,475.99	1,535.12	-892.02	-1,521.08	0.00	0.00	0.00
5,900.00	21.79	329.84	5,568.85	1,567.22	-910.67	-1,552.89	0.00	0.00	0.00
6,000.00	21.79	329.84	5,661.70	1,599.32	-929.32	-1,584.69	0.00	0.00	0.00
6,100.00	21.79	329.84	5,754.55	1,631.42	-947.97	-1,616.50	0.00	0.00	0.00
6,188.39	21.79	329.84	5,836.62	1,659.79	-964.46	-1,644.61	0.00	0.00	0.00
Start Drop -2.00									
6,200.00	21.56	329.84	5,847.41	1,663.50	-966.61	-1,648.28	2.00	-2.00	0.00
6,300.00	19.56	329.84	5,941.04	1,693.86	-984.26	-1,678.37	2.00	-2.00	0.00
6,400.00	17.56	329.84	6,035.83	1,721.38	-1,000.25	-1,705.64	2.00	-2.00	0.00
6,500.00	15.56	329.84	6,131.68	1,746.02	-1,014.57	-1,730.05	2.00	-2.00	0.00
6,600.00	13.56	329.84	6,228.47	1,767.76	-1,027.20	-1,751.59	2.00	-2.00	0.00
6,700.00	11.56	329.84	6,326.07	1,786.56	-1,038.12	-1,770.22	2.00	-2.00	0.00
6,800.00	9.56	329.84	6,424.37	1,802.41	-1,047.33	-1,785.92	2.00	-2.00	0.00
6,900.00	7.56	329.84	6,523.25	1,815.27	-1,054.81	-1,798.67	2.00	-2.00	0.00
7,000.00	5.56	329.84	6,622.59	1,825.15	-1,060.55	-1,808.46	2.00	-2.00	0.00
7,100.00	3.56	329.84	6,722.27	1,832.03	-1,064.54	-1,815.27	2.00	-2.00	0.00
7,200.00	1.56	329.84	6,822.16	1,835.89	-1,066.78	-1,819.10	2.00	-2.00	0.00
7,278.01	0.00	0.00	6,900.16	1,836.81	-1,067.32	-1,820.01	2.00	-2.00	0.00
Start DLS 10.00 TFO 180.00									
7,300.00	2.20	180.00	6,922.15	1,836.38	-1,067.32	-1,819.58	10.00	10.00	0.00
7,400.00	12.20	180.00	7,021.23	1,823.87	-1,067.32	-1,807.07	10.00	10.00	0.00
7,497.15	21.91	180.00	7,114.00	1,795.41	-1,067.32	-1,778.61	10.00	10.00	0.00
Sharon Springs									
7,500.00	22.20	180.00	7,116.64	1,794.34	-1,067.32	-1,777.54	10.00	10.00	0.00
7,555.58	27.76	180.00	7,167.00	1,770.88	-1,067.32	-1,754.08	10.00	10.00	0.00
Niobrara Top									
7,600.00	32.20	180.00	7,205.47	1,748.69	-1,067.32	-1,731.90	10.00	10.00	0.00
7,655.59	37.76	180.00	7,251.00	1,716.83	-1,067.32	-1,700.04	10.00	10.00	0.00
Niobrara B Bench									
7,700.00	42.20	180.00	7,285.02	1,688.30	-1,067.32	-1,671.52	10.00	10.00	0.00
7,737.56	45.96	180.00	7,312.00	1,662.18	-1,067.32	-1,645.40	10.00	10.00	0.00
Niobrara C Bench									
7,800.00	52.20	180.00	7,352.88	1,615.02	-1,067.32	-1,598.25	10.00	10.00	0.00
7,900.00	62.20	180.00	7,406.98	1,531.07	-1,067.32	-1,514.31	10.00	10.00	0.00
7,991.41	71.34	180.00	7,443.00	1,447.17	-1,067.32	-1,430.41	10.00	10.00	0.00

Database:	Denver Sales	Local Co-ordinate Reference:	Well THERMO 15C-33HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	GL 4984 & KB 17 @ 5001.00usft (ASSUMED)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	GL 4984 & KB 17 @ 5001.00usft (ASSUMED)
Site:	2N-66W-33 THERMO 37N-33HZ PAD	North Reference:	True
Well:	THERMO 15C-33HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLAN A		
Design:	PERMIT REV-3		

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)
Fort Hays									
8,000.00	72.20	180.00	7,445.69	1,439.01	-1,067.32	-1,422.25	10.00	10.00	0.00
8,081.44	80.34	180.00	7,465.00	1,359.95	-1,067.32	-1,343.21	10.00	10.00	0.00
Codell									
8,100.00	82.20	180.00	7,467.82	1,341.61	-1,067.32	-1,324.87	10.00	10.00	0.00
8,165.61	88.76	180.00	7,472.98	1,276.24	-1,067.32	-1,259.51	10.00	10.00	0.00
Start 4759.81 hold at 8165.61 MD - TOP OF PRODUCTION(50 FNL 2258 FEL)									
8,200.00	88.76	180.00	7,473.73	1,241.86	-1,067.32	-1,225.13	0.00	0.00	0.00
8,300.00	88.76	180.00	7,475.89	1,141.89	-1,067.32	-1,125.17	0.00	0.00	0.00
8,400.00	88.76	180.00	7,478.06	1,041.91	-1,067.32	-1,025.21	0.00	0.00	0.00
8,500.00	88.76	180.00	7,480.22	941.93	-1,067.32	-925.24	0.00	0.00	0.00
8,600.00	88.76	180.00	7,482.39	841.96	-1,067.32	-825.28	0.00	0.00	0.00
8,700.00	88.76	180.00	7,484.55	741.98	-1,067.32	-725.31	0.00	0.00	0.00
8,800.00	88.76	180.00	7,486.71	642.00	-1,067.32	-625.35	0.00	0.00	0.00
8,900.00	88.76	180.00	7,488.88	542.03	-1,067.32	-525.38	0.00	0.00	0.00
9,000.00	88.76	180.00	7,491.04	442.05	-1,067.32	-425.42	0.00	0.00	0.00
9,100.00	88.76	180.00	7,493.21	342.07	-1,067.32	-325.45	0.00	0.00	0.00
9,200.00	88.76	180.00	7,495.37	242.10	-1,067.32	-225.49	0.00	0.00	0.00
9,300.00	88.76	180.00	7,497.54	142.12	-1,067.32	-125.52	0.00	0.00	0.00
9,400.00	88.76	180.00	7,499.70	42.14	-1,067.32	-25.56	0.00	0.00	0.00
9,500.00	88.76	180.00	7,501.86	-57.83	-1,067.32	74.40	0.00	0.00	0.00
9,600.00	88.76	180.00	7,504.03	-157.81	-1,067.32	174.37	0.00	0.00	0.00
9,700.00	88.76	180.00	7,506.19	-257.79	-1,067.32	274.33	0.00	0.00	0.00
9,800.00	88.76	180.00	7,508.36	-357.76	-1,067.32	374.30	0.00	0.00	0.00
9,900.00	88.76	180.00	7,510.52	-457.74	-1,067.32	474.26	0.00	0.00	0.00
10,000.00	88.76	180.00	7,512.69	-557.72	-1,067.32	574.23	0.00	0.00	0.00
10,100.00	88.76	180.00	7,514.85	-657.69	-1,067.32	674.19	0.00	0.00	0.00
10,200.00	88.76	180.00	7,517.01	-757.67	-1,067.32	774.16	0.00	0.00	0.00
10,300.00	88.76	180.00	7,519.18	-857.65	-1,067.32	874.12	0.00	0.00	0.00
10,400.00	88.76	180.00	7,521.34	-957.62	-1,067.32	974.09	0.00	0.00	0.00
10,500.00	88.76	180.00	7,523.51	-1,057.60	-1,067.32	1,074.05	0.00	0.00	0.00
10,600.00	88.76	180.00	7,525.67	-1,157.58	-1,067.32	1,174.01	0.00	0.00	0.00
10,700.00	88.76	180.00	7,527.84	-1,257.55	-1,067.32	1,273.98	0.00	0.00	0.00
10,800.00	88.76	180.00	7,530.00	-1,357.53	-1,067.32	1,373.94	0.00	0.00	0.00
10,900.00	88.76	180.00	7,532.16	-1,457.51	-1,067.32	1,473.91	0.00	0.00	0.00
11,000.00	88.76	180.00	7,534.33	-1,557.48	-1,067.32	1,573.87	0.00	0.00	0.00
11,100.00	88.76	180.00	7,536.49	-1,657.46	-1,067.32	1,673.84	0.00	0.00	0.00
11,200.00	88.76	180.00	7,538.66	-1,757.44	-1,067.32	1,773.80	0.00	0.00	0.00
11,300.00	88.76	180.00	7,540.82	-1,857.41	-1,067.32	1,873.77	0.00	0.00	0.00
11,400.00	88.76	180.00	7,542.99	-1,957.39	-1,067.32	1,973.73	0.00	0.00	0.00
11,500.00	88.76	180.00	7,545.15	-2,057.36	-1,067.32	2,073.70	0.00	0.00	0.00
11,600.00	88.76	180.00	7,547.31	-2,157.34	-1,067.32	2,173.66	0.00	0.00	0.00
11,700.00	88.76	180.00	7,549.48	-2,257.32	-1,067.32	2,273.62	0.00	0.00	0.00
11,800.00	88.76	180.00	7,551.64	-2,357.29	-1,067.32	2,373.59	0.00	0.00	0.00
11,900.00	88.76	180.00	7,553.81	-2,457.27	-1,067.32	2,473.55	0.00	0.00	0.00
12,000.00	88.76	180.00	7,555.97	-2,557.25	-1,067.32	2,573.52	0.00	0.00	0.00
12,100.00	88.76	180.00	7,558.14	-2,657.22	-1,067.32	2,673.48	0.00	0.00	0.00
12,200.00	88.76	180.00	7,560.30	-2,757.20	-1,067.32	2,773.45	0.00	0.00	0.00
12,300.00	88.76	180.00	7,562.46	-2,857.18	-1,067.32	2,873.41	0.00	0.00	0.00
12,400.00	88.76	180.00	7,564.63	-2,957.15	-1,067.32	2,973.38	0.00	0.00	0.00
12,500.00	88.76	180.00	7,566.79	-3,057.13	-1,067.32	3,073.34	0.00	0.00	0.00

Database:	Denver Sales	Local Co-ordinate Reference:	Well THERMO 15C-33HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	GL 4984 & KB 17 @ 5001.00usft (ASSUMED)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	GL 4984 & KB 17 @ 5001.00usft (ASSUMED)
Site:	2N-66W-33 THERMO 37N-33HZ PAD	North Reference:	True
Well:	THERMO 15C-33HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLAN A		
Design:	PERMIT REV-3		

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)
12,600.00	88.76	180.00	7,568.96	-3,157.11	-1,067.32	3,173.30	0.00	0.00	0.00
12,700.00	88.76	180.00	7,571.12	-3,257.08	-1,067.32	3,273.27	0.00	0.00	0.00
12,800.00	88.76	180.00	7,573.29	-3,357.06	-1,067.32	3,373.23	0.00	0.00	0.00
12,900.00	88.76	180.00	7,575.45	-3,457.04	-1,067.32	3,473.20	0.00	0.00	0.00
12,925.42	88.76	180.00	7,576.00	-3,482.45	-1,067.32	3,498.61	0.00	0.00	0.00
TD at 12925.42 - PBHL_THERMO 15C-33HZ(461 FSL 2270 FEL)									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL_THERMO 15C-3 - plan hits target center - Point	0.00	0.00	7,576.00	-3,482.45	-1,067.32	14,559,085.06	1,701,722.15	40.088636	-104.780808

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,841.08	1,800.00	9 5/8"	9.625	13.500	
8,165.61	7,472.98	TOP OF PRODUCTION(50 FNL 2258 FEL)	5.500	7.875	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,436.70	1,420.00	Fox Hills Marker		0.00	
4,804.89	4,552.00	Sussex		0.00	
7,497.15	7,114.00	Sharon Springs		0.00	
7,555.58	7,167.00	Niobrara Top		0.00	
7,655.59	7,251.00	Niobrara B Bench		0.00	
7,737.56	7,312.00	Niobrara C Bench		0.00	
7,991.41	7,443.00	Fort Hays		0.00	
8,081.44	7,465.00	Codell		0.00	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
300.00	300.00	0.00	0.00	Start Build 1.50
1,752.79	1,718.01	236.01	-137.14	Start 4435.60 hold at 1752.79 MD
6,188.39	5,836.62	1,659.79	-964.46	Start Drop -2.00
7,278.01	6,900.16	1,836.81	-1,067.32	Start DLS 10.00 TFO 180.00
8,165.61	7,472.98	1,276.25	-1,067.32	Start 4759.81 hold at 8165.61 MD
12,925.42	7,576.00	-3,482.45	-1,067.32	TD at 12925.42