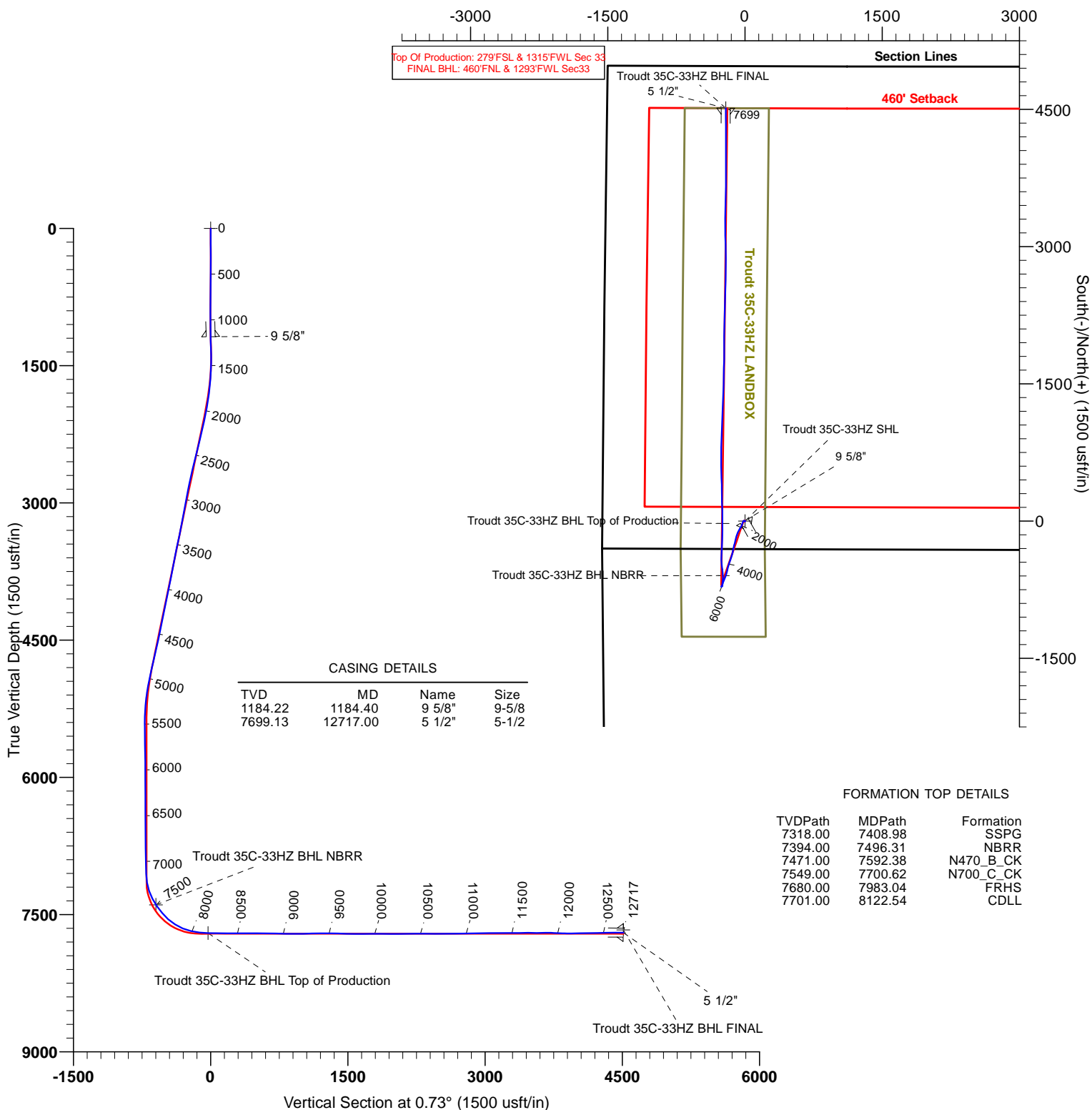


US ROCKIES WATTENBERG PLANNING



Project: WELD-NAD83-UTMFT13N
Site: 2N-67W-33 Troudt 14N-33HZ Pad
Well: Troudt 35C-33HZ
Wellbore: Plan A
Design: PDD Actual Surveys

West(-)/East(+) (1500 usft/in)



CASING DETAILS

TVD	MD	Name	Size
1184.22	1184.40	9 5/8"	9-5/8
7699.13	12717.00	5 1/2"	5-1/2

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
7318.00	7408.98	SSPG
7394.00	7496.31	NBRR
7471.00	7592.38	N470_B_CK
7549.00	7700.62	N700_C_CK
7680.00	7983.04	FRHS
7701.00	8122.54	CDLL

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Troudt 35C-33HZ SHL	0.00	0.00	0.00	14558939.63	1668455.15	40.088400	-104.899751	Point
Troudt 35C-33HZ BHL NBRR	7394.00	-594.62	-242.52	14558344.73	1668213.30	40.086767	-104.900618	Point
Troudt 35C-33HZ BHL FINAL	7669.13	4513.72	-209.06	14563453.11	1668241.00	40.100796	-104.900499	Point
Troudt 35C-33HZ BHL Top of Production	7703.30	-24.40	-244.99	14558914.95	1668210.19	40.088333	-104.900627	Point



Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 35C-33HZ - Slot 35C-33HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	5037+25 @ 5062.00usft (HP311)
Site:	2N-67W-33 Troudt 14N-33HZ Pad	MD Reference:	5037+25 @ 5062.00usft (HP311)
Well:	Troudt 35C-33HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	PDD Actual Surveys	Database:	EDM 5000 MultiUser DB

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-67W-33 Troudt 14N-33HZ Pad, centered on 34C-33HZ				
Site Position:		Northing:	14,558,940.06 usft	Latitude:	40.088402
From:	Lat/Long	Easting:	1,668,395.17 usft	Longitude:	-104.899966
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.06 °

Well	Troudt 35C-33HZ - Slot 35C-33HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,558,939.62 usft	Latitude:	40.088400
	+E/-W	0.00 usft	Easting:	1,668,455.15 usft	Longitude:	-104.899752
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	5,037.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	4/1/2015	8.49	66.64	52,465

Design	PDD Actual Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	0.73	

Survey Program	Date	5/15/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
20.00	1,149.00	Cathedral MWD Surface (Plan A)	APC_ISCWSA REV 2 MWD	Fixed:v2:standard declination	
1,281.00	8,083.00	PDD MWD+IFR1 Vert/Curve (Plan A)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
8,177.00	12,620.00	PDD MWD+IFR1 Lateral (Plan A)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
12,717.00	12,717.00	PDD Projection to Bit (Plan A)	APC_BLIND	OWSG BLIND	

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	
20.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	
103.00	0.80	9.30	103.00	0.57	0.09	0.57	0.96	0.96	0.00	
168.00	0.80	11.60	167.99	1.46	0.26	1.47	0.05	0.00	3.54	
225.00	0.90	44.80	224.99	2.17	0.65	2.18	0.87	0.18	58.25	
286.00	0.90	63.10	285.98	2.73	1.42	2.75	0.47	0.00	30.00	
346.00	0.30	111.00	345.97	2.89	1.99	2.91	1.22	-1.00	79.83	
410.00	0.30	177.30	409.97	2.66	2.15	2.68	0.51	0.00	103.59	

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 35C-33HZ - Slot 35C-33HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	5037+25 @ 5062.00usft (HP311)
Site:	2N-67W-33 Troudt 14N-33HZ Pad	MD Reference:	5037+25 @ 5062.00usft (HP311)
Well:	Troudt 35C-33HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	PDD Actual Surveys	Database:	EDM 5000 MultiUser DB

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)	
473.00	0.50	180.00	472.97	2.22	2.16	2.25	0.32	0.32	4.29	
536.00	0.80	176.30	535.97	1.50	2.19	1.53	0.48	0.48	-5.87	
600.00	1.20	194.00	599.96	0.41	2.05	0.43	0.78	0.63	27.66	
664.00	1.50	199.80	663.94	-1.03	1.61	-1.01	0.51	0.47	9.06	
728.00	1.30	204.30	727.92	-2.48	1.02	-2.47	0.36	-0.31	7.03	
791.00	1.20	213.80	790.91	-3.68	0.36	-3.67	0.36	-0.16	15.08	
854.00	0.70	266.00	853.90	-4.25	-0.39	-4.26	1.51	-0.79	82.86	
918.00	1.10	311.30	917.89	-3.88	-1.24	-3.89	1.23	0.63	70.78	
982.00	1.10	327.30	981.88	-2.95	-2.03	-2.98	0.48	0.00	25.00	
1,046.00	1.30	334.70	1,045.87	-1.78	-2.67	-1.81	0.39	0.31	11.56	
1,111.00	1.50	321.00	1,110.85	-0.45	-3.53	-0.50	0.60	0.31	-21.08	
1,149.00	1.50	324.20	1,148.83	0.34	-4.13	0.28	0.22	0.00	8.42	
1,281.00	1.40	350.20	1,280.79	3.33	-5.41	3.26	0.50	-0.08	19.70	
1,375.00	2.80	289.00	1,374.74	5.21	-7.78	5.11	2.61	1.49	-65.11	
1,469.00	3.30	254.20	1,468.61	5.22	-12.56	5.06	2.01	0.53	-37.02	
1,564.00	3.50	217.30	1,563.45	2.17	-16.94	1.95	2.27	0.21	-38.84	
1,658.00	4.90	205.40	1,657.20	-3.74	-20.41	-4.00	1.75	1.49	-12.66	
1,753.00	6.70	198.30	1,751.71	-12.67	-23.89	-12.97	2.04	1.89	-7.47	
1,847.00	8.80	192.00	1,844.85	-24.91	-27.10	-25.26	2.41	2.23	-6.70	
1,942.00	9.10	204.00	1,938.70	-38.88	-31.67	-39.28	1.99	0.32	12.63	
2,037.00	12.00	211.30	2,032.09	-54.19	-39.86	-54.69	3.36	3.05	7.68	
2,131.00	14.80	210.30	2,123.52	-72.91	-50.99	-73.55	2.99	2.98	-1.06	
2,320.00	15.10	206.40	2,306.13	-115.80	-74.12	-116.74	0.56	0.16	-2.06	
2,508.00	15.10	197.30	2,487.66	-161.12	-92.29	-162.29	1.26	0.00	-4.84	
2,697.00	12.80	189.50	2,671.09	-205.29	-103.07	-206.58	1.57	-1.22	-4.13	
2,886.00	11.60	197.60	2,855.84	-244.05	-112.27	-245.46	1.10	-0.63	4.29	
3,075.00	10.90	192.70	3,041.21	-279.60	-121.95	-281.13	0.63	-0.37	-2.59	
3,264.00	10.70	190.60	3,226.86	-314.28	-129.10	-315.90	0.23	-0.11	-1.11	
3,453.00	12.50	195.90	3,412.00	-351.20	-137.94	-352.93	1.11	0.95	2.80	
3,641.00	11.10	194.10	3,596.02	-388.32	-147.92	-390.17	0.77	-0.74	-0.96	
3,830.00	12.80	202.60	3,780.93	-425.30	-160.40	-427.31	1.29	0.90	4.50	
4,020.00	11.30	198.70	3,966.74	-462.36	-174.46	-464.55	0.90	-0.79	-2.05	
4,208.00	12.00	191.70	4,150.88	-498.95	-184.33	-501.26	0.84	0.37	-3.72	
4,397.00	12.10	194.80	4,335.72	-537.34	-193.37	-539.76	0.35	0.05	1.64	
4,586.00	12.10	195.90	4,520.52	-575.54	-203.86	-578.09	0.12	0.00	0.58	
4,775.00	14.60	202.90	4,704.41	-616.55	-218.56	-619.28	1.57	1.32	3.70	
4,964.00	12.80	200.40	4,888.03	-658.12	-235.12	-661.06	1.00	-0.95	-1.32	
5,153.00	9.00	192.40	5,073.59	-692.19	-245.60	-695.27	2.16	-2.01	-4.23	
5,343.00	4.60	224.00	5,262.27	-712.20	-254.09	-715.38	2.96	-2.32	16.63	
5,531.00	0.90	327.40	5,450.07	-716.39	-260.13	-719.64	2.60	-1.97	55.00	
5,720.00	1.90	64.70	5,639.03	-713.80	-258.10	-717.03	1.17	0.53	51.48	
5,909.00	1.10	61.90	5,827.96	-711.60	-253.66	-714.78	0.42	-0.42	-1.48	
6,097.00	0.20	131.90	6,015.95	-710.97	-251.83	-714.12	0.56	-0.48	37.23	

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 35C-33HZ - Slot 35C-33HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	5037+25 @ 5062.00usft (HP311)
Site:	2N-67W-33 Troudt 14N-33HZ Pad	MD Reference:	5037+25 @ 5062.00usft (HP311)
Well:	Troudt 35C-33HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	PDD Actual Surveys	Database:	EDM 5000 MultiUser DB

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)	
6,287.00	0.50	324.20	6,205.95	-710.52	-252.06	-713.68	0.37	0.16	-88.26	
6,474.00	0.70	130.80	6,392.94	-710.61	-251.68	-713.75	0.64	0.11	89.09	
6,663.00	1.80	38.40	6,581.91	-709.03	-248.96	-712.15	1.04	0.58	-48.89	
6,853.00	0.90	115.00	6,771.86	-707.33	-245.75	-710.40	0.96	-0.47	40.32	
7,042.00	2.30	344.60	6,960.82	-704.30	-245.41	-707.37	1.57	0.74	-68.99	
7,136.00	2.10	335.80	7,054.75	-700.91	-246.62	-703.99	0.42	-0.21	-9.36	
7,231.00	9.00	7.40	7,149.26	-691.94	-246.38	-695.02	7.68	7.26	33.26	
7,326.00	19.00	3.20	7,241.32	-669.07	-244.55	-672.13	10.57	10.53	-4.42	
7,420.00	26.70	2.20	7,327.88	-632.64	-242.88	-635.68	8.20	8.19	-1.06	
7,515.00	34.70	358.60	7,409.51	-584.19	-242.73	-587.24	8.64	8.42	-3.79	
7,610.00	41.30	351.60	7,484.36	-526.05	-247.97	-529.17	8.29	6.95	-7.37	
7,704.00	47.90	355.50	7,551.27	-460.52	-255.25	-463.73	7.60	7.02	4.15	
7,799.00	57.40	1.80	7,608.88	-385.16	-256.76	-388.41	11.30	10.00	6.63	
7,893.00	67.70	2.90	7,652.15	-301.93	-253.31	-305.14	11.01	10.96	1.17	
7,988.00	76.70	2.20	7,681.16	-211.66	-249.30	-214.82	9.50	9.47	-0.74	
8,083.00	83.60	1.50	7,697.40	-118.17	-246.29	-121.30	7.30	7.26	-0.74	
8,177.00	89.20	0.10	7,703.30	-24.40	-244.99	-27.52	6.14	5.96	-1.49	
8,272.00	88.00	358.30	7,705.62	70.55	-246.31	67.41	2.28	-1.26	-1.89	
8,367.00	90.80	357.90	7,706.62	165.49	-249.46	162.29	2.98	2.95	-0.42	
8,461.00	91.10	359.30	7,705.06	259.44	-251.76	256.21	1.52	0.32	1.49	
8,556.00	89.60	359.70	7,704.48	354.43	-252.59	351.19	1.63	-1.58	0.42	
8,651.00	89.40	358.30	7,705.31	449.41	-254.24	446.14	1.49	-0.21	-1.47	
8,745.00	89.90	357.20	7,705.88	543.34	-257.93	540.01	1.29	0.53	-1.17	
8,840.00	89.00	359.30	7,706.80	638.28	-260.83	634.91	2.40	-0.95	2.21	
8,934.00	88.70	1.50	7,708.68	732.26	-260.18	728.88	2.36	-0.32	2.34	
9,029.00	89.00	0.40	7,710.59	827.22	-258.60	823.86	1.20	0.32	-1.16	
9,123.00	90.30	1.50	7,711.16	921.20	-257.05	917.85	1.81	1.38	1.17	
9,218.00	91.10	2.90	7,710.00	1,016.12	-253.40	1,012.81	1.70	0.84	1.47	
9,312.00	91.70	2.50	7,707.71	1,109.99	-248.97	1,106.73	0.77	0.64	-0.43	
9,407.00	90.60	2.90	7,705.80	1,204.86	-244.50	1,201.65	1.23	-1.16	0.42	
9,502.00	89.20	2.90	7,705.97	1,299.74	-239.69	1,296.58	1.47	-1.47	0.00	
9,596.00	88.50	1.80	7,707.85	1,393.64	-235.84	1,390.52	1.39	-0.74	-1.17	
9,691.00	88.90	1.50	7,710.01	1,488.58	-233.10	1,485.48	0.53	0.42	-0.32	
9,785.00	88.90	0.40	7,711.81	1,582.54	-231.55	1,579.47	1.17	0.00	-1.17	
9,880.00	90.60	1.80	7,712.23	1,677.52	-229.72	1,674.46	2.32	1.79	1.47	
9,974.00	91.10	0.80	7,710.83	1,771.48	-227.59	1,768.44	1.19	0.53	-1.06	
10,069.00	89.00	0.10	7,710.75	1,866.47	-226.84	1,863.43	2.33	-2.21	-0.74	
10,163.00	89.70	0.80	7,711.82	1,960.46	-226.11	1,957.42	1.05	0.74	0.74	
10,258.00	90.40	0.80	7,711.73	2,055.45	-224.78	2,052.42	0.74	0.74	0.00	
10,352.00	91.00	0.10	7,710.58	2,149.44	-224.04	2,146.41	0.98	0.64	-0.74	
10,447.00	89.90	1.50	7,709.84	2,244.43	-222.71	2,241.41	1.87	-1.16	1.47	
10,542.00	90.40	1.10	7,709.59	2,339.40	-220.56	2,336.40	0.67	0.53	-0.42	
10,636.00	89.40	2.50	7,709.75	2,433.35	-217.61	2,430.38	1.83	-1.06	1.49	
10,730.00	89.70	1.50	7,710.49	2,527.29	-214.33	2,524.36	1.11	0.32	-1.06	

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troutd 35C-33HZ - Slot 35C-33HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	5037+25 @ 5062.00usft (HP311)
Site:	2N-67W-33 Troutd 14N-33HZ Pad	MD Reference:	5037+25 @ 5062.00usft (HP311)
Well:	Troutd 35C-33HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	PDD Actual Surveys	Database:	EDM 5000 MultiUser DB

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)
10,825.00	90.60	2.20	7,710.24	2,622.24	-211.26	2,619.34	1.20	0.95	0.74
10,919.00	90.80	0.80	7,709.09	2,716.20	-208.80	2,713.32	1.50	0.21	-1.49
11,014.00	91.70	359.30	7,707.02	2,811.17	-208.72	2,808.28	1.84	0.95	-1.58
11,108.00	90.60	0.10	7,705.14	2,905.15	-209.21	2,902.25	1.45	-1.17	0.85
11,202.00	90.60	358.60	7,704.15	2,999.14	-210.27	2,996.21	1.60	0.00	-1.60
11,297.00	90.40	357.60	7,703.32	3,094.08	-213.42	3,091.11	1.07	-0.21	-1.05
11,392.00	91.10	0.10	7,702.08	3,189.04	-215.33	3,186.04	2.73	0.74	2.63
11,486.00	89.40	0.10	7,701.67	3,283.04	-215.17	3,280.03	1.81	-1.81	0.00
11,581.00	91.00	0.40	7,701.34	3,378.03	-214.75	3,375.02	1.71	1.68	0.32
11,676.00	89.70	1.80	7,700.76	3,473.01	-212.93	3,470.02	2.01	-1.37	1.47
11,770.00	89.90	1.50	7,701.08	3,566.97	-210.22	3,564.00	0.38	0.21	-0.32
11,865.00	90.60	0.80	7,700.67	3,661.95	-208.31	3,659.00	1.04	0.74	-0.74
11,959.00	88.00	0.10	7,701.82	3,755.93	-207.58	3,752.98	2.86	-2.77	-0.74
12,054.00	87.40	359.00	7,705.63	3,850.85	-208.32	3,847.88	1.32	-0.63	-1.16
12,148.00	90.80	0.80	7,707.11	3,944.82	-208.48	3,941.84	4.09	3.62	1.91
12,243.00	91.30	0.40	7,705.37	4,039.80	-207.49	4,036.83	0.67	0.53	-0.42
12,337.00	91.00	359.30	7,703.48	4,133.78	-207.74	4,130.79	1.21	-0.32	-1.17
12,432.00	90.80	0.10	7,701.99	4,228.76	-208.23	4,225.77	0.87	-0.21	0.84
12,526.00	91.80	359.70	7,699.85	4,322.74	-208.40	4,319.73	1.15	1.06	-0.43
12,620.00	89.70	359.70	7,698.62	4,416.72	-208.89	4,413.70	2.23	-2.23	0.00
12,717.00	89.70	0.10	7,699.13	4,513.72	-209.06	4,510.69	0.41	0.00	0.41

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,184.40	1,184.22	9 5/8"	9-5/8	12-1/4
12,717.00	7,699.13	5 1/2"	5-1/2	7-7/8