

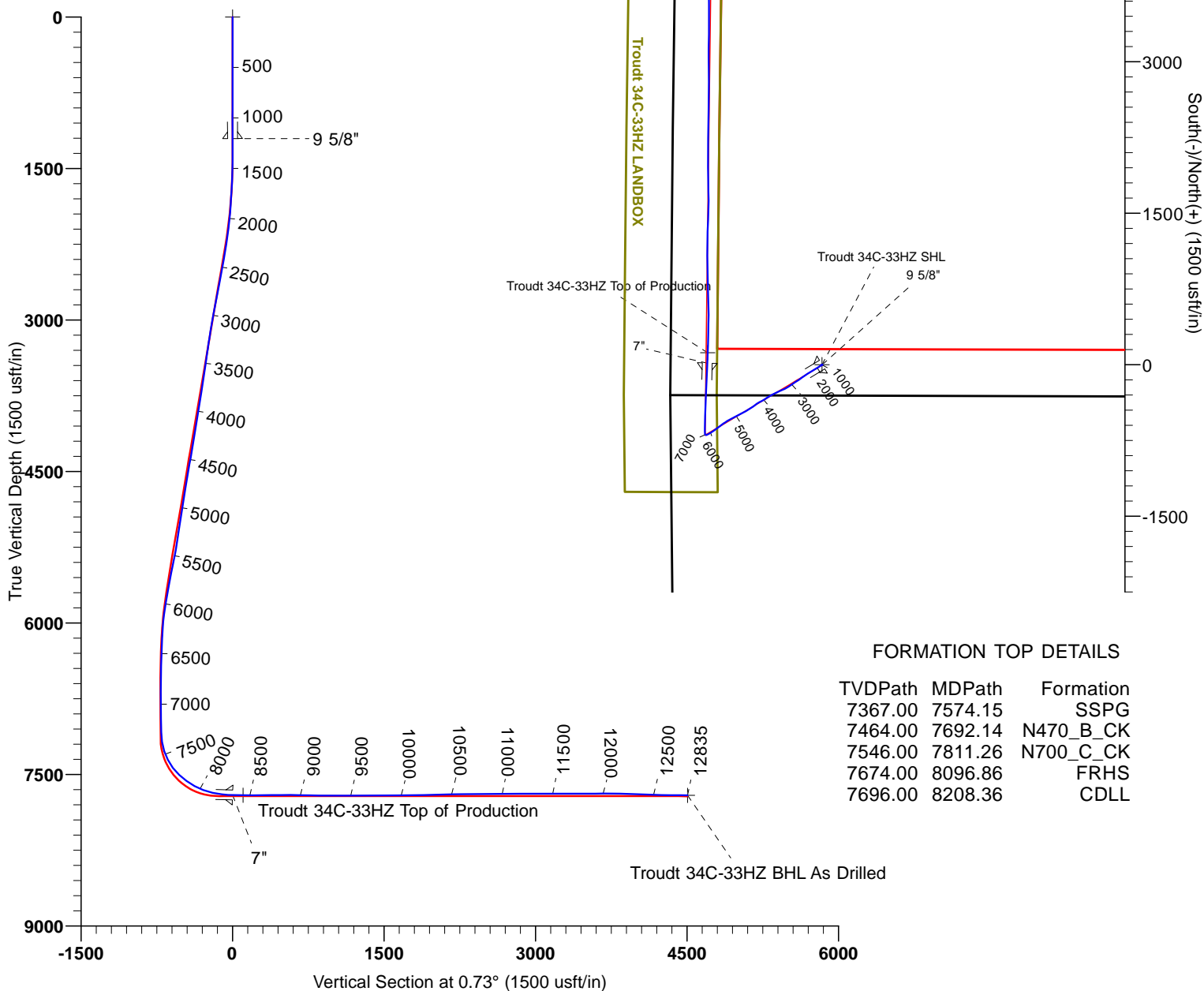
US ROCKIES WATTENBERG PLANNING



Project: WELD-NAD83-UTMFT13N
Site: 2N-67W-33 Troudt 14N-33HZ Pad
Well: Troudt 34C-33HZ
Wellbore: Plan B
Design: PDD Actual Surveys

CASING DETAILS

TVD	MD	Name	Size
1204.94	1205.00	9 5/8"	9-5/8
7704.38	8330.00	7"	7



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
7367.00	7574.15	SSPG
7464.00	7692.14	N470_B_CK
7546.00	7811.26	N700_C_CK
7674.00	8096.86	FRHS
7696.00	8208.36	CDLL

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Troudt 34C-33HZ SHL	0.00	0.00	0.00	14558940.07	1668395.17	40.088402	-104.899966	Point
Troudt 34C-33HZ Top of Production	7706.70	118.70	-1131.26	14559057.50	1667263.78	40.088728	-104.904011	Point
Troudt 34C-33HZ BHL As Drilled	7707.07	4519.36	-1114.58	14563458.17	1667275.51	40.100812	-104.903952	Point



Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 34C-33HZ - Slot 34C-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 34C-33HZ	North Reference:	True
Wellbore:	Plan B	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 34C-33HZ - Slot 34C-33HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,558,940.06 usft	Latitude:	40.088402
	+E/-W	0.00 usft	Easting:	1,668,395.17 usft	Longitude:	-104.899966
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	5,037.00 usft

Wellbore	Plan B				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/7/2015	8.40	66.65	52,550

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	5/19/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
20.00	1,150.00	Cathedral MWD Surface (Plan B)	APC_ISCWSA REV 2 MWD	Fixed:v2:standard declination	
1,252.00	8,285.00	PDD MWD+IFR1 Vert/Curve (Plan B)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
8,433.00	12,766.00	PDD MWD+IFR1 Lateral (Plan B)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
12,835.00	12,835.00	Survey #4 (Plan B)	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	0.40	301.30	103.00	0.15	-0.25	0.15	0.48	0.48	0.00	
168.00	0.40	257.10	168.00	0.22	-0.66	0.21	0.46	0.00	-68.00	
225.00	0.10	322.00	225.00	0.21	-0.89	0.20	0.65	-0.53	113.86	
286.00	0.50	255.80	286.00	0.19	-1.18	0.17	0.77	0.66	-108.52	
346.00	0.40	263.40	345.99	0.10	-1.64	0.08	0.19	-0.17	12.67	
410.00	0.60	289.90	409.99	0.19	-2.18	0.16	0.47	0.31	41.41	

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 34C-33HZ - Slot 34C-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 34C-33HZ	North Reference:	True
Wellbore:	Plan B	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	0.80	289.30	472.99	0.45	-2.90	0.41	0.32	0.32	-0.95
536.00	0.70	287.90	535.98	0.71	-3.68	0.66	0.16	-0.16	-2.22
600.00	0.20	265.70	599.98	0.82	-4.17	0.77	0.81	-0.78	-34.69
664.00	0.40	87.20	663.98	0.82	-4.06	0.77	0.94	0.31	-278.91
728.00	0.40	106.70	727.98	0.77	-3.62	0.73	0.21	0.00	30.47
791.00	0.60	99.40	790.98	0.65	-3.08	0.62	0.33	0.32	-11.59
854.00	0.70	113.10	853.97	0.45	-2.40	0.42	0.29	0.16	21.75
918.00	0.70	108.50	917.97	0.17	-1.67	0.15	0.09	0.00	-7.19
982.00	0.80	109.20	981.96	-0.10	-0.88	-0.11	0.16	0.16	1.09
1,046.00	0.90	95.30	1,045.95	-0.29	0.04	-0.29	0.36	0.16	-21.72
1,111.00	0.70	66.00	1,110.95	-0.18	0.91	-0.17	0.69	-0.31	-45.08
1,150.00	0.90	75.50	1,149.94	0.00	1.43	0.01	0.61	0.51	24.36
1,252.00	0.80	43.00	1,251.93	0.72	2.69	0.75	0.48	-0.10	-31.86
1,344.00	0.60	23.10	1,343.93	1.63	3.32	1.67	0.34	-0.22	-21.63
1,436.00	2.10	237.50	1,435.91	1.17	2.08	1.19	2.84	1.63	-158.26
1,530.00	3.50	237.40	1,529.80	-1.30	-1.79	-1.33	1.49	1.49	-0.11
1,624.00	4.60	238.00	1,623.56	-4.85	-7.40	-4.94	1.17	1.17	0.64
1,718.00	5.50	234.40	1,717.19	-9.47	-14.26	-9.65	1.01	0.96	-3.83
1,813.00	7.20	238.20	1,811.61	-15.26	-23.02	-15.55	1.84	1.79	4.00
1,907.00	8.60	237.90	1,904.71	-22.09	-33.98	-22.53	1.49	1.49	-0.32
2,001.00	10.30	237.60	1,997.43	-30.33	-47.03	-30.93	1.81	1.81	-0.32
2,095.00	12.10	238.60	2,089.64	-39.97	-62.54	-40.76	1.93	1.91	1.06
2,189.00	13.90	237.60	2,181.23	-51.15	-80.48	-52.17	1.93	1.91	-1.06
2,283.00	15.50	239.40	2,272.15	-63.60	-100.83	-64.88	1.77	1.70	1.91
2,378.00	18.20	238.80	2,363.06	-77.75	-124.45	-79.33	2.85	2.84	-0.63
2,472.00	19.60	237.40	2,451.99	-93.85	-150.29	-95.75	1.57	1.49	-1.49
2,660.00	16.90	232.90	2,630.53	-127.33	-198.66	-129.85	1.62	-1.44	-2.39
2,849.00	18.50	237.40	2,810.58	-160.06	-245.84	-163.18	1.11	0.85	2.38
3,037.00	18.30	236.40	2,988.97	-192.46	-295.55	-196.21	0.20	-0.11	-0.53
3,226.00	16.00	235.90	3,169.56	-223.49	-341.84	-227.83	1.22	-1.22	-0.26
3,414.00	18.70	248.60	3,349.05	-249.02	-391.38	-253.99	2.47	1.44	6.76
3,603.00	19.00	243.30	3,527.93	-273.91	-447.08	-279.58	0.92	0.16	-2.80
3,791.00	17.80	242.10	3,706.31	-301.10	-499.82	-307.45	0.67	-0.64	-0.64
3,979.00	16.70	237.00	3,885.86	-329.26	-547.87	-336.22	0.99	-0.59	-2.71
4,168.00	17.30	241.50	4,066.61	-357.46	-595.34	-365.02	0.76	0.32	2.38
4,356.00	17.70	237.70	4,245.92	-386.07	-644.07	-394.25	0.64	0.21	-2.02
4,545.00	15.80	231.60	4,426.90	-417.42	-688.53	-426.15	1.37	-1.01	-3.23
4,734.00	17.50	240.80	4,608.01	-447.27	-733.51	-456.58	1.66	0.90	4.87
4,922.00	19.00	240.90	4,786.54	-475.94	-784.93	-485.91	0.80	0.80	0.05
5,110.00	18.10	242.10	4,964.78	-504.49	-837.48	-515.12	0.52	-0.48	0.64
5,299.00	17.30	245.80	5,144.83	-529.75	-889.06	-541.04	0.73	-0.42	1.96
5,488.00	19.50	236.70	5,324.20	-558.60	-941.07	-570.54	1.91	1.16	-4.81
5,677.00	17.80	232.60	5,503.27	-593.47	-990.39	-606.04	1.14	-0.90	-2.17

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 34C-33HZ - Slot 34C-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 34C-33HZ	North Reference:	True
Wellbore:	Plan B	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)
5,865.00	17.70	234.60	5,682.33	-627.48	-1,036.52	-640.63	0.33	-0.05	1.06
6,054.00	14.20	233.80	5,864.02	-657.82	-1,078.66	-671.51	1.86	-1.85	-0.42
6,242.00	7.30	241.60	6,048.62	-677.15	-1,107.81	-691.20	3.74	-3.67	4.15
6,431.00	4.60	241.90	6,236.58	-686.43	-1,125.06	-700.71	1.43	-1.43	0.16
6,619.00	2.80	247.60	6,424.18	-691.73	-1,135.95	-706.15	0.98	-0.96	3.03
6,807.00	2.60	246.70	6,611.98	-695.17	-1,144.12	-709.69	0.11	-0.11	-0.48
6,996.00	1.30	308.70	6,800.88	-695.52	-1,149.73	-710.11	1.22	-0.69	32.80
7,184.00	1.60	298.20	6,988.82	-692.95	-1,153.70	-707.59	0.21	0.16	-5.59
7,278.00	1.70	298.10	7,082.78	-691.67	-1,156.09	-706.34	0.11	0.11	-0.11
7,373.00	8.30	349.20	7,177.39	-684.26	-1,158.62	-698.97	7.74	6.95	53.79
7,467.00	18.70	359.30	7,268.68	-662.47	-1,160.08	-677.19	11.30	11.06	10.74
7,561.00	26.70	0.60	7,355.33	-626.22	-1,160.05	-640.95	8.53	8.51	1.38
7,656.00	37.10	3.80	7,435.88	-576.15	-1,157.92	-590.86	11.09	10.95	3.37
7,750.00	46.50	0.70	7,505.88	-513.62	-1,155.62	-528.31	10.24	10.00	-3.30
7,844.00	54.40	1.00	7,565.69	-441.21	-1,154.53	-455.88	8.41	8.40	0.32
7,939.00	61.70	1.40	7,615.93	-360.67	-1,152.83	-375.33	7.69	7.68	0.42
8,033.00	69.80	2.80	7,654.50	-275.10	-1,149.66	-289.73	8.72	8.62	1.49
8,128.00	77.00	4.40	7,681.63	-184.31	-1,143.93	-198.86	7.75	7.58	1.68
8,222.00	83.30	2.20	7,697.70	-91.90	-1,138.61	-106.40	7.09	6.70	-2.34
8,285.00	87.60	1.80	7,702.70	-29.15	-1,136.42	-43.62	6.85	6.83	-0.63
8,433.00	89.30	2.20	7,706.70	118.70	-1,131.26	104.28	1.18	1.15	0.27
8,527.00	90.10	2.20	7,707.19	212.63	-1,127.65	198.25	0.85	0.85	0.00
8,621.00	90.70	0.80	7,706.54	306.59	-1,125.19	292.23	1.62	0.64	-1.49
8,715.00	90.60	0.90	7,705.47	400.58	-1,123.80	386.23	0.15	-0.11	0.11
8,809.00	90.80	359.50	7,704.32	494.57	-1,123.47	480.21	1.50	0.21	-1.49
8,903.00	89.60	358.80	7,703.99	588.55	-1,124.86	574.17	1.48	-1.28	-0.74
8,997.00	88.50	359.10	7,705.55	682.52	-1,126.59	668.12	1.21	-1.17	0.32
9,091.00	88.50	358.30	7,708.01	776.47	-1,128.72	762.02	0.85	0.00	-0.85
9,186.00	89.20	358.30	7,709.92	871.41	-1,131.54	856.92	0.74	0.74	0.00
9,280.00	90.00	358.30	7,710.58	965.36	-1,134.32	950.83	0.85	0.85	0.00
9,374.00	91.00	0.20	7,709.76	1,059.34	-1,135.55	1,044.79	2.28	1.06	2.02
9,468.00	89.30	359.90	7,709.51	1,153.34	-1,135.47	1,138.78	1.84	-1.81	-0.32
9,562.00	91.00	1.70	7,709.26	1,247.32	-1,134.16	1,232.77	2.63	1.81	1.91
9,657.00	89.10	2.20	7,709.18	1,342.26	-1,130.93	1,327.75	2.07	-2.00	0.53
9,751.00	90.20	2.70	7,709.75	1,436.17	-1,126.91	1,421.70	1.29	1.17	0.53
9,845.00	90.50	1.10	7,709.18	1,530.12	-1,123.79	1,515.68	1.73	0.32	-1.70
9,939.00	90.70	359.40	7,708.20	1,624.11	-1,123.38	1,609.66	1.82	0.21	-1.81
10,033.00	91.30	359.10	7,706.56	1,718.08	-1,124.61	1,703.62	0.71	0.64	-0.32
10,127.00	89.60	359.10	7,705.82	1,812.07	-1,126.09	1,797.57	1.81	-1.81	0.00
10,222.00	91.30	359.90	7,705.07	1,907.06	-1,126.92	1,892.54	1.98	1.79	0.84
10,316.00	92.00	359.60	7,702.36	2,001.02	-1,127.33	1,986.49	0.81	0.74	-0.32
10,410.00	91.00	0.30	7,699.90	2,094.98	-1,127.41	2,080.45	1.30	-1.06	0.74
10,504.00	91.60	359.80	7,697.77	2,188.96	-1,127.33	2,174.42	0.83	0.64	-0.53
10,598.00	90.90	0.60	7,695.72	2,282.93	-1,127.00	2,268.39	1.13	-0.74	0.85

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 34C-33HZ - Slot 34C-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 34C-33HZ	North Reference:	True
Wellbore:	Plan B	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)
10,693.00	89.70	0.90	7,695.22	2,377.92	-1,125.76	2,363.39	1.30	-1.26	0.32
10,787.00	90.30	0.70	7,695.22	2,471.91	-1,124.44	2,457.38	0.67	0.64	-0.21
10,881.00	91.20	0.60	7,693.99	2,565.90	-1,123.38	2,551.38	0.96	0.96	-0.11
10,975.00	90.60	2.20	7,692.52	2,659.85	-1,121.08	2,645.35	1.82	-0.64	1.70
11,069.00	89.80	0.50	7,692.19	2,753.82	-1,118.87	2,739.34	2.00	-0.85	-1.81
11,164.00	90.10	359.40	7,692.27	2,848.82	-1,118.95	2,834.33	1.20	0.32	-1.16
11,258.00	90.80	358.60	7,691.53	2,942.80	-1,120.59	2,928.29	1.13	0.74	-0.85
11,352.00	89.90	359.30	7,690.96	3,036.78	-1,122.31	3,022.24	1.21	-0.96	0.74
11,447.00	89.60	0.80	7,691.37	3,131.78	-1,122.23	3,117.23	1.61	-0.32	1.58
11,541.00	90.20	0.80	7,691.54	3,225.77	-1,120.92	3,211.23	0.64	0.64	0.00
11,635.00	90.90	1.20	7,690.63	3,319.75	-1,119.28	3,305.22	0.86	0.74	0.43
11,729.00	89.00	0.10	7,690.72	3,413.74	-1,118.21	3,399.21	2.34	-2.02	-1.17
11,824.00	89.70	0.10	7,691.79	3,508.73	-1,118.04	3,494.20	0.74	0.74	0.00
11,918.00	90.40	359.50	7,691.71	3,602.73	-1,118.37	3,588.19	0.98	0.74	-0.64
12,012.00	91.20	359.20	7,690.40	3,696.71	-1,119.44	3,682.15	0.91	0.85	-0.32
12,106.00	88.90	358.70	7,690.32	3,790.69	-1,121.16	3,776.10	2.50	-2.45	-0.53
12,201.00	89.10	359.30	7,691.98	3,885.66	-1,122.82	3,871.04	0.67	0.21	0.63
12,295.00	87.50	0.60	7,694.76	3,979.62	-1,122.90	3,964.99	2.19	-1.70	1.38
12,389.00	88.70	0.80	7,697.88	4,073.55	-1,121.75	4,058.93	1.29	1.28	0.21
12,483.00	87.20	1.50	7,701.24	4,167.47	-1,119.87	4,152.87	1.76	-1.60	0.74
12,577.00	89.10	0.80	7,704.28	4,261.40	-1,117.98	4,246.81	2.15	2.02	-0.74
12,671.00	89.00	0.80	7,705.84	4,355.38	-1,116.67	4,340.80	0.11	-0.11	0.00
12,766.00	89.80	0.70	7,706.83	4,450.36	-1,115.43	4,435.79	0.85	0.84	-0.11
12,835.00	89.80	0.70	7,707.07	4,519.36	-1,114.58	4,504.79	0.00	0.00	0.00

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,205.00	1,204.94	9 5/8"	9-5/8	12-1/4	
8,330.00	7,704.38	7"	7	8-3/4	