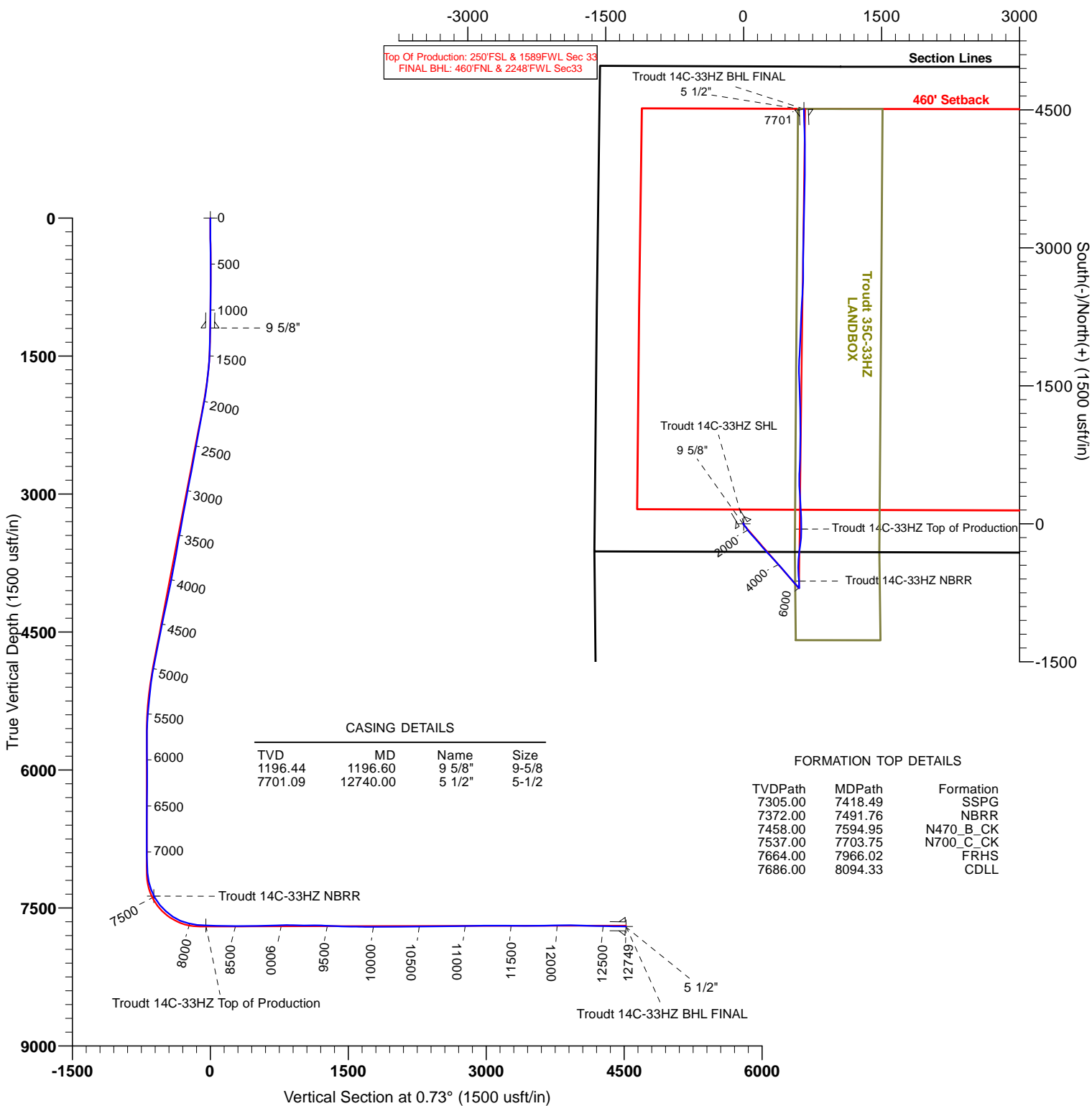


US ROCKIES WATTENBERG PLANNING



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



TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Troudt 14C-33HZ SHL	0.00	0.00	0.00	14558939.09	1668515.21	40.088399	-104.899537	Point
Troudt 14C-33HZ NBRR	7372.00	-621.33	602.40	14558318.44	1669118.31	40.086692	-104.897383	Point
Troudt 14C-33HZ Top of Production	7691.40	-56.87	627.83	14558882.93	1669143.10	40.088242	-104.897292	Point
Troudt 14C-33HZ BHL FINAL	7701.18	4511.70	655.66	14563451.53	1669165.77	40.100788	-104.897192	Point

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 14C-33HZ - Slot 14C-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 14C-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 14C-33HZ - Slot 14C-33HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,558,939.09 usft	Latitude:	40.088399
	+E/-W	0.00 usft	Easting:	1,668,515.20 usft	Longitude:	-104.899537
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	1,161.00	Cathedral MWD Surface (Plan A)	APC_ISCWSA REV 2 MWD	Fixed:v2:standard declination	
1,281.00	12,687.00	PDD MWD+IFR1 Vert/Curve (Plan A)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	
12,749.00	12,749.00	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	
168.00	0.70	33.20	168.00	0.76	0.50	0.76	0.47	0.47	0.00	
225.00	0.50	14.60	224.99	1.29	0.75	1.30	0.49	-0.35	-32.63	
286.00	0.40	70.50	285.99	1.62	1.02	1.63	0.71	-0.16	91.64	
346.00	0.50	62.60	345.99	1.81	1.45	1.83	0.20	0.17	-13.17	
410.00	0.70	34.80	409.99	2.26	1.92	2.28	0.54	0.31	-43.44	
473.00	0.50	59.80	472.98	2.71	2.37	2.74	0.52	-0.32	39.68	
536.00	0.70	39.90	535.98	3.14	2.86	3.18	0.45	0.32	-31.59	

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 14C-33HZ - Slot 14C-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 14C-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)
600.00	0.60	339.00	599.98	3.76	2.99	3.80	1.04	-0.16	-95.16
664.00	0.80	313.10	663.97	4.38	2.54	4.41	0.58	0.31	-40.47
728.00	1.40	285.90	727.96	4.90	1.46	4.91	1.22	0.94	-42.50
791.00	1.60	243.90	790.94	4.72	-0.07	4.72	1.73	0.32	-66.67
854.00	1.90	238.20	853.91	3.78	-1.74	3.76	0.55	0.48	-9.05
918.00	1.50	219.20	917.88	2.57	-3.17	2.53	1.07	-0.63	-29.69
982.00	1.10	207.50	981.87	1.38	-3.99	1.33	0.75	-0.63	-18.28
1,046.00	0.80	179.90	1,045.86	0.39	-4.27	0.33	0.84	-0.47	-43.13
1,111.00	0.60	150.90	1,110.85	-0.36	-4.10	-0.42	0.62	-0.31	-44.62
1,161.00	1.10	149.70	1,160.85	-1.01	-3.73	-1.05	1.00	1.00	-2.40
1,281.00	0.80	147.40	1,280.83	-2.71	-2.70	-2.74	0.25	-0.25	-1.92
1,375.00	1.50	146.30	1,374.81	-4.28	-1.67	-4.30	0.75	0.74	-1.17
1,564.00	5.50	142.50	1,563.42	-13.53	5.22	-13.46	2.12	2.12	-2.01
1,753.00	8.60	138.80	1,750.97	-31.35	20.05	-31.10	1.66	1.64	-1.96
1,942.00	10.80	149.00	1,937.27	-57.17	38.48	-56.67	1.47	1.16	5.40
2,131.00	14.60	139.20	2,121.63	-90.40	63.18	-89.58	2.30	2.01	-5.19
2,320.00	13.40	138.10	2,305.02	-124.73	93.37	-123.53	0.65	-0.63	-0.58
2,508.00	14.50	137.50	2,487.47	-158.30	123.82	-156.71	0.59	0.59	-0.32
2,697.00	13.80	140.40	2,670.74	-193.11	154.17	-191.13	0.53	-0.37	1.53
2,886.00	14.90	137.10	2,853.84	-228.28	185.08	-225.90	0.73	0.58	-1.75
3,075.00	13.70	141.30	3,036.98	-263.55	215.62	-260.78	0.84	-0.63	2.22
3,264.00	14.10	136.60	3,220.46	-297.75	245.43	-294.59	0.63	0.21	-2.49
3,453.00	14.50	137.40	3,403.60	-331.89	277.27	-328.33	0.24	0.21	0.42
3,641.00	13.30	136.30	3,586.09	-364.85	308.14	-360.89	0.65	-0.64	-0.59
3,830.00	14.50	139.80	3,769.56	-398.64	338.43	-394.30	0.77	0.63	1.85
4,020.00	14.70	135.50	3,953.43	-434.00	370.68	-429.25	0.58	0.11	-2.26
4,208.00	17.00	137.10	4,134.27	-471.15	406.12	-465.94	1.25	1.22	0.85
4,397.00	15.30	140.70	4,315.81	-510.69	440.72	-505.04	1.04	-0.90	1.90
4,586.00	13.80	140.20	4,498.74	-547.31	470.95	-541.27	0.80	-0.79	-0.26
4,775.00	15.20	137.50	4,681.72	-582.90	502.11	-576.45	0.82	0.74	-1.43
4,964.00	15.00	142.40	4,864.20	-620.55	533.78	-613.70	0.68	-0.11	2.59
5,153.00	9.90	134.60	5,048.71	-651.35	560.29	-644.16	2.84	-2.70	-4.13
5,342.00	8.30	137.10	5,235.32	-672.76	581.15	-665.30	0.87	-0.85	1.32
5,531.00	4.80	154.40	5,423.08	-689.89	593.85	-682.27	2.11	-1.85	9.15
5,719.00	0.80	84.00	5,610.84	-696.85	598.56	-689.17	2.44	-2.13	-37.45
5,908.00	0.40	48.30	5,799.83	-696.27	600.36	-688.57	0.28	-0.21	-18.89
6,096.00	0.30	99.50	5,987.83	-695.92	601.34	-688.20	0.17	-0.05	27.23
6,285.00	0.30	106.50	6,176.82	-696.14	602.30	-688.41	0.02	0.00	3.70
6,474.00	0.80	129.80	6,365.81	-697.12	603.79	-689.37	0.28	0.26	12.33
6,663.00	0.40	169.80	6,554.80	-698.62	604.92	-690.85	0.29	-0.21	21.16
6,852.00	0.50	46.10	6,743.80	-698.70	605.63	-690.92	0.42	0.05	-65.45
7,041.00	0.10	132.80	6,932.80	-698.24	606.35	-690.45	0.27	-0.21	45.87
7,230.00	4.00	355.70	7,121.65	-691.77	605.97	-684.00	2.16	2.06	-72.54

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 14C-33HZ - Slot 14C-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 14C-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)
7,325.00	13.40	354.80	7,215.45	-677.47	604.73	-669.71	9.90	9.89	-0.95
7,420.00	19.90	359.30	7,306.42	-650.31	603.53	-642.57	6.97	6.84	4.74
7,514.00	30.30	356.10	7,391.43	-610.55	601.72	-602.83	11.15	11.06	-3.40
7,609.00	40.40	357.00	7,468.82	-555.75	598.47	-548.08	10.65	10.63	0.95
7,704.00	47.50	357.40	7,537.17	-489.94	595.26	-482.32	7.48	7.47	0.42
7,798.00	56.00	2.20	7,595.33	-416.23	595.19	-408.61	9.89	9.04	5.11
7,893.00	67.60	6.90	7,640.17	-332.96	602.00	-325.26	12.96	12.21	4.95
7,987.00	76.20	8.60	7,669.34	-244.52	614.07	-236.67	9.31	9.15	1.81
8,082.00	84.90	4.90	7,684.93	-151.56	625.03	-143.58	9.93	9.16	-3.89
8,177.00	87.30	358.50	7,691.40	-56.87	627.83	-48.87	7.18	2.53	-6.74
8,271.00	88.00	358.50	7,695.25	37.01	625.38	44.98	0.74	0.74	0.00
8,366.00	90.50	359.00	7,696.50	131.98	623.30	139.91	2.68	2.63	0.53
8,461.00	89.60	355.20	7,696.41	226.84	618.50	234.70	4.11	-0.95	-4.00
8,555.00	89.00	355.90	7,697.56	320.54	611.21	328.31	0.98	-0.64	0.74
8,650.00	90.30	358.90	7,698.14	415.43	606.90	423.13	3.44	1.37	3.16
8,744.00	90.70	0.70	7,697.32	509.42	606.57	517.11	1.96	0.43	1.91
8,839.00	92.30	2.70	7,694.84	604.34	609.39	612.06	2.70	1.68	2.11
8,933.00	93.60	1.70	7,690.00	698.14	612.99	705.90	1.74	1.38	-1.06
9,028.00	90.20	1.30	7,686.85	793.05	615.47	800.82	3.60	-3.58	-0.42
9,123.00	87.60	0.50	7,688.67	888.01	616.97	895.80	2.86	-2.74	-0.84
9,217.00	88.90	359.90	7,691.54	981.96	617.29	989.75	1.52	1.38	-0.64
9,312.00	91.30	359.60	7,691.38	1,076.95	616.88	1,084.72	2.55	2.53	-0.32
9,406.00	89.40	359.60	7,690.80	1,170.94	616.22	1,178.70	2.02	-2.02	0.00
9,501.00	86.90	359.20	7,693.87	1,265.88	615.23	1,273.62	2.67	-2.63	-0.42
9,595.00	87.70	357.20	7,698.30	1,359.73	612.28	1,367.42	2.29	0.85	-2.13
9,690.00	87.90	358.40	7,701.95	1,454.58	608.64	1,462.22	1.28	0.21	1.26
9,784.00	89.90	357.30	7,703.75	1,548.49	605.11	1,556.08	2.43	2.13	-1.17
9,879.00	88.60	359.50	7,704.99	1,643.44	602.46	1,650.98	2.69	-1.37	2.32
9,973.00	89.80	1.70	7,706.31	1,737.42	603.44	1,744.97	2.67	1.28	2.34
10,068.00	89.90	3.20	7,706.55	1,832.33	607.50	1,839.92	1.58	0.11	1.58
10,162.00	92.10	2.60	7,704.91	1,926.19	612.26	1,933.83	2.43	2.34	-0.64
10,257.00	89.80	2.80	7,703.34	2,021.06	616.73	2,028.76	2.43	-2.42	0.21
10,351.00	89.70	2.60	7,703.75	2,114.96	621.16	2,122.70	0.24	-0.11	-0.21
10,446.00	89.80	2.40	7,704.16	2,209.87	625.30	2,217.65	0.24	0.11	-0.21
10,541.00	91.10	2.80	7,703.42	2,304.76	629.61	2,312.60	1.43	1.37	0.42
10,635.00	91.10	2.90	7,701.61	2,398.63	634.29	2,406.52	0.11	0.00	0.11
10,730.00	91.00	3.00	7,699.87	2,493.49	639.17	2,501.43	0.15	-0.11	0.11
10,824.00	91.00	3.30	7,698.23	2,587.33	644.34	2,595.33	0.32	0.00	0.32
10,919.00	90.20	0.30	7,697.24	2,682.27	647.32	2,690.30	3.27	-0.84	-3.16
11,013.00	90.50	359.80	7,696.66	2,776.27	647.40	2,784.29	0.62	0.32	-0.53
11,107.00	91.30	0.40	7,695.19	2,870.25	647.57	2,878.27	1.06	0.85	0.64
11,202.00	90.90	0.90	7,693.36	2,965.23	648.65	2,973.25	0.67	-0.42	0.53
11,297.00	90.00	1.10	7,692.62	3,060.21	650.30	3,068.25	0.97	-0.95	0.21

Survey Report

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well Troudt 14C-33HZ - Slot 14C-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 14C-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)	
11,391.00	90.50	1.40	7,692.21	3,154.19	652.35	3,162.24	0.62	0.53	0.32	
11,486.00	89.10	1.40	7,692.54	3,249.16	654.68	3,257.23	1.47	-1.47	0.00	
11,580.00	89.50	1.20	7,693.69	3,343.12	656.81	3,351.22	0.48	0.43	-0.21	
11,675.00	90.00	1.40	7,694.10	3,438.10	658.96	3,446.21	0.57	0.53	0.21	
11,770.00	90.20	1.00	7,693.94	3,533.08	660.95	3,541.21	0.47	0.21	-0.42	
11,864.00	90.80	1.40	7,693.11	3,627.05	662.92	3,635.20	0.77	0.64	0.43	
11,959.00	91.30	1.80	7,691.37	3,722.00	665.57	3,730.18	0.67	0.53	0.42	
12,053.00	90.70	359.90	7,689.73	3,815.97	666.97	3,824.16	2.12	-0.64	-2.02	
12,148.00	89.50	359.60	7,689.57	3,910.97	666.55	3,919.14	1.30	-1.26	-0.32	
12,242.00	88.00	359.70	7,691.62	4,004.94	665.98	4,013.10	1.60	-1.60	0.11	
12,336.00	88.60	359.80	7,694.41	4,098.90	665.57	4,107.04	0.65	0.64	0.11	
12,431.00	88.80	359.10	7,696.56	4,193.87	664.66	4,202.00	0.77	0.21	-0.74	
12,525.00	89.00	358.30	7,698.37	4,287.82	662.52	4,295.92	0.88	0.21	-0.85	
12,620.00	89.30	358.50	7,699.78	4,382.78	659.87	4,390.83	0.38	0.32	0.21	
12,687.00	89.40	358.00	7,700.54	4,449.74	657.83	4,457.76	0.76	0.15	-0.75	
12,749.00	89.40	358.00	7,701.19	4,511.70	655.66	4,519.69	0.00	0.00	0.00	

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,196.60	1,196.44	9 5/8"	9-5/8	12-1/4	
12,740.00	7,701.09	5 1/2"	5-1/2	8-1/2	