

VERDAD RESOURCES

WATTENBERG FIELD

9N-59W-01 TIMBRO 0101 PAD

TIMBRO 0101-07H

Wellbore #1

Plan: Design #1

Standard Planning Report

21 May, 2019

Project: WATTENBERG FIELD
 Site: 9N-59W-01 TIMBRO 0101 PAD
 Well: TIMBRO 0101-07H
 Wellbore: Wellbore #1
 Design: Design #1

VERDAD RESOURCES

CASING DETAILS

TVD	MD	Name	Size
1700.00	1723.36	9 5/8"	9-5/8

SHL
356' FNL
2097' FEL

LP
300' FNL
2162' FWL

BHL
300' FSL
2149' FWL

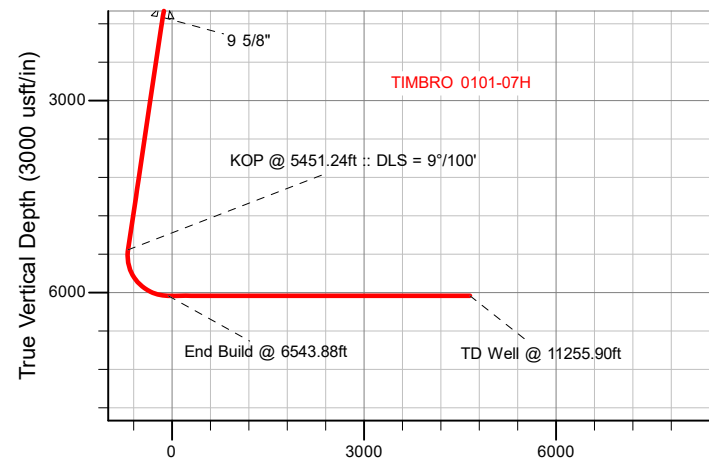
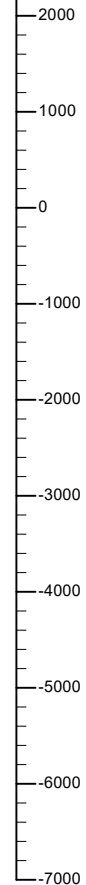
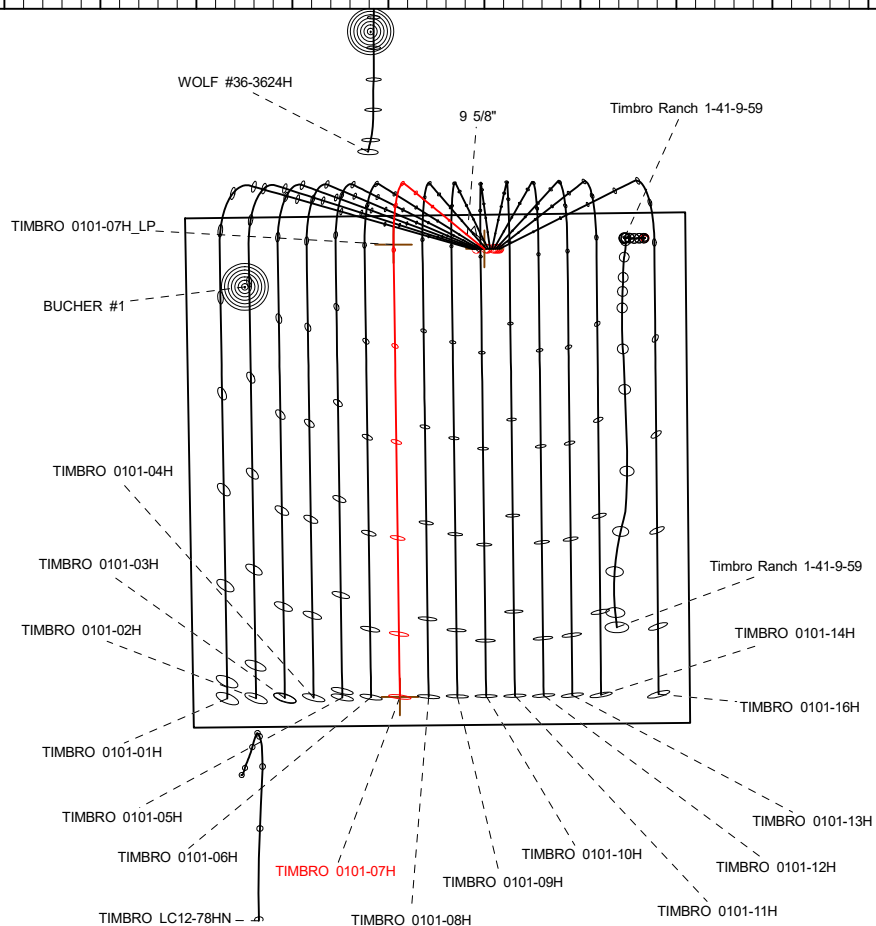
SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
380.00	0.00	0.00	380.00	0.00	0.00	0.00	0.00	0.00	
1030.50	13.01	309.30	1024.92	46.58	-56.91	2.00	309.30	-47.37	
5451.24	13.01	309.30	5332.19	676.92	-827.03	0.00	0.00	-688.40	
6543.88	90.00	179.20	6050.00	45.31	-945.07	9.00	-129.37	-58.50	
11255.90	90.00	179.20	6050.00	-4666.24	-879.12	0.00	0.00	4653.51	TIMBRO 0101-07H_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
TIMBRO 0101-07H_SHL	0.00	0.00	0.00	40.786478	-103.924892
TIMBRO 0101-07H_BHL	6050.00	-4666.24	-879.12	40.773670	-103.928066

West(-)/East(+) (2000 usft/in)



Vertical Section at 179.20° (3000 usft/in)

T
M Azimuths to True North
 Magnetic North: 7.58°

Magnetic Field
 Strength: 52455.0snT
 Dip Angle: 67.24°
 Date: 5/20/2019
 Model: IGRF2015

WELL DETAILS: TIMBRO 0101-07H	
GL = 4943'	
RKB = 24' @ 4967.00usft (RIG)	
Plan: Design #1 (TIMBRO 0101-07H/Wellbore #1)	
Date:	5/21/2019

Hewlett-Packard

Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well TIMBRO 0101-07H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4967.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4967.00usft (RIG)
Site:	9N-59W-01 TIMBRO 0101 PAD	North Reference:	True
Well:	TIMBRO 0101-07H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	WATTENBERG FIELD		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	9N-59W-01 TIMBRO 0101 PAD				
Site Position:		Northing:	1,533,230.40 usft	Latitude:	40.786474
From:	Lat/Long	Easting:	3,436,039.96 usft	Longitude:	-103.925326
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.02 °

Well	TIMBRO 0101-07H					
Well Position	+N/-S	1.45 usft	Northing:	1,533,233.98 usft	Latitude:	40.786478
	+E/-W	119.99 usft	Easting:	3,436,159.91 usft	Longitude:	-103.924892
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	4,943.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/20/2019	7.58	67.24	52,455.00823393

Design	Design #1			
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	179.20

Plan Survey Tool Program	Date	5/21/2019			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	1,700.00	Design #1 (Wellbore #1)	ISCWSA REV 2 MWD Fixed:v2:standard declination	
2	1,700.00	11,255.90	Design #1 (Wellbore #1)	ISCWSA REV 2 MWD Fixed:v2:standard declination	

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	
380.00	0.00	0.00	380.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,030.50	13.01	309.30	1,024.92	46.58	-56.91	2.00	2.00	0.00	309.30	
5,451.24	13.01	309.30	5,332.19	676.92	-827.03	0.00	0.00	0.00	0.00	
6,543.88	90.00	179.20	6,050.00	45.31	-945.07	9.00	7.05	-11.91	-129.37	
11,255.90	90.00	179.20	6,050.00	-4,666.24	-879.12	0.00	0.00	0.00	0.00	TIMBRO 0101-07H_E

Hewlett-Packard

Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well TIMBRO 0101-07H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4967.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4967.00usft (RIG)
Site:	9N-59W-01 TIMBRO 0101 PAD	North Reference:	True
Well:	TIMBRO 0101-07H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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
380.00	0.00	0.00	380.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 380.00ft									
400.00	0.40	309.30	400.00	0.04	-0.05	-0.04	2.00	2.00	0.00
500.00	2.40	309.30	499.96	1.59	-1.94	-1.62	2.00	2.00	0.00
600.00	4.40	309.30	599.78	5.35	-6.53	-5.44	2.00	2.00	0.00
700.00	6.40	309.30	699.33	11.31	-13.82	-11.50	2.00	2.00	0.00
800.00	8.40	309.30	798.50	19.47	-23.78	-19.80	2.00	2.00	0.00
900.00	10.40	309.30	897.15	29.81	-36.42	-30.32	2.00	2.00	0.00
1,000.00	12.40	309.30	995.17	42.33	-51.71	-43.05	2.00	2.00	0.00
1,030.50	13.01	309.30	1,024.92	46.58	-56.91	-47.37	2.00	2.00	0.00
Hold Tangent @ 1030.50ft									
1,100.00	13.01	309.30	1,092.64	56.49	-69.01	-57.44	0.00	0.00	0.00
1,200.00	13.01	309.30	1,190.07	70.75	-86.43	-71.95	0.00	0.00	0.00
1,300.00	13.01	309.30	1,287.51	85.00	-103.85	-86.45	0.00	0.00	0.00
1,400.00	13.01	309.30	1,384.94	99.26	-121.28	-100.95	0.00	0.00	0.00
1,500.00	13.01	309.30	1,482.37	113.52	-138.70	-115.45	0.00	0.00	0.00
1,600.00	13.01	309.30	1,579.81	127.78	-156.12	-129.95	0.00	0.00	0.00
1,700.00	13.01	309.30	1,677.24	142.04	-173.54	-144.45	0.00	0.00	0.00
1,723.36	13.01	309.30	1,700.00	145.37	-177.61	-147.84	0.00	0.00	0.00
9 5/8"									
1,800.00	13.01	309.30	1,774.67	156.30	-190.96	-158.95	0.00	0.00	0.00
1,900.00	13.01	309.30	1,872.11	170.56	-208.38	-173.45	0.00	0.00	0.00
2,000.00	13.01	309.30	1,969.54	184.82	-225.80	-187.95	0.00	0.00	0.00
2,100.00	13.01	309.30	2,066.97	199.07	-243.22	-202.45	0.00	0.00	0.00
2,200.00	13.01	309.30	2,164.40	213.33	-260.64	-216.95	0.00	0.00	0.00
2,300.00	13.01	309.30	2,261.84	227.59	-278.06	-231.45	0.00	0.00	0.00
2,400.00	13.01	309.30	2,359.27	241.85	-295.48	-245.95	0.00	0.00	0.00
2,500.00	13.01	309.30	2,456.70	256.11	-312.90	-260.45	0.00	0.00	0.00
2,600.00	13.01	309.30	2,554.14	270.37	-330.32	-274.95	0.00	0.00	0.00
2,700.00	13.01	309.30	2,651.57	284.63	-347.75	-289.45	0.00	0.00	0.00
2,800.00	13.01	309.30	2,749.00	298.89	-365.17	-303.95	0.00	0.00	0.00
2,900.00	13.01	309.30	2,846.44	313.14	-382.59	-318.46	0.00	0.00	0.00
3,000.00	13.01	309.30	2,943.87	327.40	-400.01	-332.96	0.00	0.00	0.00
3,100.00	13.01	309.30	3,041.30	341.66	-417.43	-347.46	0.00	0.00	0.00
3,200.00	13.01	309.30	3,138.74	355.92	-434.85	-361.96	0.00	0.00	0.00
3,300.00	13.01	309.30	3,236.17	370.18	-452.27	-376.46	0.00	0.00	0.00
3,400.00	13.01	309.30	3,333.60	384.44	-469.69	-390.96	0.00	0.00	0.00
3,500.00	13.01	309.30	3,431.03	398.70	-487.11	-405.46	0.00	0.00	0.00
3,600.00	13.01	309.30	3,528.47	412.96	-504.53	-419.96	0.00	0.00	0.00
3,700.00	13.01	309.30	3,625.90	427.21	-521.95	-434.46	0.00	0.00	0.00
3,800.00	13.01	309.30	3,723.33	441.47	-539.37	-448.96	0.00	0.00	0.00
3,900.00	13.01	309.30	3,820.77	455.73	-556.79	-463.46	0.00	0.00	0.00
4,000.00	13.01	309.30	3,918.20	469.99	-574.22	-477.96	0.00	0.00	0.00
4,100.00	13.01	309.30	4,015.63	484.25	-591.64	-492.46	0.00	0.00	0.00
4,200.00	13.01	309.30	4,113.07	498.51	-609.06	-506.96	0.00	0.00	0.00
4,300.00	13.01	309.30	4,210.50	512.77	-626.48	-521.46	0.00	0.00	0.00
4,400.00	13.01	309.30	4,307.93	527.03	-643.90	-535.96	0.00	0.00	0.00
4,500.00	13.01	309.30	4,405.37	541.28	-661.32	-550.46	0.00	0.00	0.00
4,600.00	13.01	309.30	4,502.80	555.54	-678.74	-564.97	0.00	0.00	0.00

Hewlett-Packard

Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well TIMBRO 0101-07H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4967.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4967.00usft (RIG)
Site:	9N-59W-01 TIMBRO 0101 PAD	North Reference:	True
Well:	TIMBRO 0101-07H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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)
4,700.00	13.01	309.30	4,600.23	569.80	-696.16	-579.47	0.00	0.00	0.00
4,800.00	13.01	309.30	4,697.66	584.06	-713.58	-593.97	0.00	0.00	0.00
4,900.00	13.01	309.30	4,795.10	598.32	-731.00	-608.47	0.00	0.00	0.00
5,000.00	13.01	309.30	4,892.53	612.58	-748.42	-622.97	0.00	0.00	0.00
5,100.00	13.01	309.30	4,989.96	626.84	-765.84	-637.47	0.00	0.00	0.00
5,200.00	13.01	309.30	5,087.40	641.10	-783.27	-651.97	0.00	0.00	0.00
5,300.00	13.01	309.30	5,184.83	655.35	-800.69	-666.47	0.00	0.00	0.00
5,400.00	13.01	309.30	5,282.26	669.61	-818.11	-680.97	0.00	0.00	0.00
5,451.24	13.01	309.30	5,332.19	676.92	-827.03	-688.40	0.00	0.00	0.00
KOP @ 5451.24ft :: DLS = 9°/100'									
5,500.00	10.77	290.84	5,379.92	682.02	-835.54	-693.62	9.00	-4.60	-37.87
5,600.00	11.21	242.28	5,478.28	680.81	-852.91	-692.66	9.00	0.45	-48.56
5,700.00	17.20	214.01	5,575.29	664.00	-869.82	-676.08	9.00	5.99	-28.26
5,800.00	25.03	201.44	5,668.56	631.99	-885.86	-644.30	9.00	7.83	-12.57
5,900.00	33.42	194.73	5,755.77	585.58	-900.62	-598.09	9.00	8.40	-6.71
6,000.00	42.04	190.50	5,834.80	525.89	-913.76	-538.60	9.00	8.62	-4.23
6,100.00	50.78	187.49	5,903.69	454.42	-924.93	-467.29	9.00	8.73	-3.01
6,200.00	59.57	185.16	5,960.74	372.91	-933.87	-385.91	9.00	8.79	-2.34
6,300.00	68.40	183.21	6,004.56	283.37	-940.37	-296.47	9.00	8.83	-1.95
6,400.00	77.25	181.49	6,034.06	188.00	-944.24	-201.17	9.00	8.85	-1.72
6,500.00	86.11	179.89	6,048.51	89.16	-945.42	-102.35	9.00	8.86	-1.60
6,543.88	90.00	179.20	6,050.00	45.31	-945.07	-58.50	9.00	8.86	-1.57
End Build @ 6543.88ft									
6,600.00	90.00	179.20	6,050.00	-10.80	-944.28	-2.39	0.00	0.00	0.00
6,700.00	90.00	179.20	6,050.00	-110.79	-942.88	97.61	0.00	0.00	0.00
6,800.00	90.00	179.20	6,050.00	-210.78	-941.48	197.61	0.00	0.00	0.00
6,900.00	90.00	179.20	6,050.00	-310.77	-940.08	297.61	0.00	0.00	0.00
7,000.00	90.00	179.20	6,050.00	-410.76	-938.68	397.61	0.00	0.00	0.00
7,100.00	90.00	179.20	6,050.00	-510.75	-937.28	497.61	0.00	0.00	0.00
7,200.00	90.00	179.20	6,050.00	-610.74	-935.88	597.61	0.00	0.00	0.00
7,300.00	90.00	179.20	6,050.00	-710.73	-934.48	697.61	0.00	0.00	0.00
7,400.00	90.00	179.20	6,050.00	-810.72	-933.08	797.61	0.00	0.00	0.00
7,500.00	90.00	179.20	6,050.00	-910.71	-931.68	897.61	0.00	0.00	0.00
7,600.00	90.00	179.20	6,050.00	-1,010.70	-930.28	997.61	0.00	0.00	0.00
7,700.00	90.00	179.20	6,050.00	-1,110.69	-928.89	1,097.61	0.00	0.00	0.00
7,800.00	90.00	179.20	6,050.00	-1,210.68	-927.49	1,197.61	0.00	0.00	0.00
7,900.00	90.00	179.20	6,050.00	-1,310.67	-926.09	1,297.61	0.00	0.00	0.00
8,000.00	90.00	179.20	6,050.00	-1,410.66	-924.69	1,397.61	0.00	0.00	0.00
8,100.00	90.00	179.20	6,050.00	-1,510.65	-923.29	1,497.61	0.00	0.00	0.00
8,200.00	90.00	179.20	6,050.00	-1,610.64	-921.89	1,597.61	0.00	0.00	0.00
8,300.00	90.00	179.20	6,050.00	-1,710.63	-920.49	1,697.61	0.00	0.00	0.00
8,400.00	90.00	179.20	6,050.00	-1,810.62	-919.09	1,797.61	0.00	0.00	0.00
8,500.00	90.00	179.20	6,050.00	-1,910.61	-917.69	1,897.61	0.00	0.00	0.00
8,600.00	90.00	179.20	6,050.00	-2,010.60	-916.29	1,997.61	0.00	0.00	0.00
8,700.00	90.00	179.20	6,050.00	-2,110.59	-914.89	2,097.61	0.00	0.00	0.00
8,800.00	90.00	179.20	6,050.00	-2,210.58	-913.49	2,197.61	0.00	0.00	0.00
8,900.00	90.00	179.20	6,050.00	-2,310.57	-912.09	2,297.61	0.00	0.00	0.00
9,000.00	90.00	179.20	6,050.00	-2,410.56	-910.69	2,397.61	0.00	0.00	0.00
9,100.00	90.00	179.20	6,050.00	-2,510.55	-909.29	2,497.61	0.00	0.00	0.00
9,200.00	90.00	179.20	6,050.00	-2,610.54	-907.89	2,597.61	0.00	0.00	0.00
9,300.00	90.00	179.20	6,050.00	-2,710.53	-906.49	2,697.61	0.00	0.00	0.00
9,400.00	90.00	179.20	6,050.00	-2,810.52	-905.09	2,797.61	0.00	0.00	0.00
9,500.00	90.00	179.20	6,050.00	-2,910.51	-903.69	2,897.61	0.00	0.00	0.00
9,600.00	90.00	179.20	6,050.00	-3,010.50	-902.29	2,997.61	0.00	0.00	0.00

Hewlett-Packard

Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well TIMBRO 0101-07H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4967.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4967.00usft (RIG)
Site:	9N-59W-01 TIMBRO 0101 PAD	North Reference:	True
Well:	TIMBRO 0101-07H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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)
9,700.00	90.00	179.20	6,050.00	-3,110.49	-900.89	3,097.61	0.00	0.00	0.00
9,800.00	90.00	179.20	6,050.00	-3,210.48	-899.49	3,197.61	0.00	0.00	0.00
9,900.00	90.00	179.20	6,050.00	-3,310.47	-898.10	3,297.61	0.00	0.00	0.00
10,000.00	90.00	179.20	6,050.00	-3,410.46	-896.70	3,397.61	0.00	0.00	0.00
10,100.00	90.00	179.20	6,050.00	-3,510.45	-895.30	3,497.61	0.00	0.00	0.00
10,200.00	90.00	179.20	6,050.00	-3,610.44	-893.90	3,597.61	0.00	0.00	0.00
10,300.00	90.00	179.20	6,050.00	-3,710.43	-892.50	3,697.61	0.00	0.00	0.00
10,400.00	90.00	179.20	6,050.00	-3,810.42	-891.10	3,797.61	0.00	0.00	0.00
10,500.00	90.00	179.20	6,050.00	-3,910.41	-889.70	3,897.61	0.00	0.00	0.00
10,600.00	90.00	179.20	6,050.00	-4,010.40	-888.30	3,997.61	0.00	0.00	0.00
10,700.00	90.00	179.20	6,050.00	-4,110.39	-886.90	4,097.61	0.00	0.00	0.00
10,800.00	90.00	179.20	6,050.00	-4,210.39	-885.50	4,197.61	0.00	0.00	0.00
10,900.00	90.00	179.20	6,050.00	-4,310.38	-884.10	4,297.61	0.00	0.00	0.00
11,000.00	90.00	179.20	6,050.00	-4,410.37	-882.70	4,397.61	0.00	0.00	0.00
11,100.00	90.00	179.20	6,050.00	-4,510.36	-881.30	4,497.61	0.00	0.00	0.00
11,200.00	90.00	179.20	6,050.00	-4,610.35	-879.90	4,597.61	0.00	0.00	0.00
11,255.90	90.00	179.20	6,050.00	-4,666.24	-879.12	4,653.51	0.00	0.00	0.00
TD Well @ 11255.90ft									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,723.36	1,700.00	9 5/8"	9-5/8	13-1/2	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
380.00	380.00	0.00	0.00	Begin Nudge @ 380.00ft	
1,030.50	1,024.92	46.58	-56.91	Hold Tangent @ 1030.50ft	
5,451.24	5,332.19	676.92	-827.03	KOP @ 5451.24ft :: DLS = 9°/100'	
6,543.88	6,050.00	45.31	-945.07	End Build @ 6543.88ft	
11,255.90	6,050.00	-4,666.24	-879.12	TD Well @ 11255.90ft	