

VERDAD RESOURCES

WATTENBERG FIELD

9N-59W-01 TIMBRO 0101 PAD

TIMBRO 0101-01H

Wellbore #1

Plan: Design #1

Standard Planning Report

21 May, 2019

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

VERDAD RESOURCES

CASING DETAILS

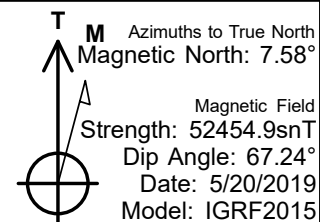
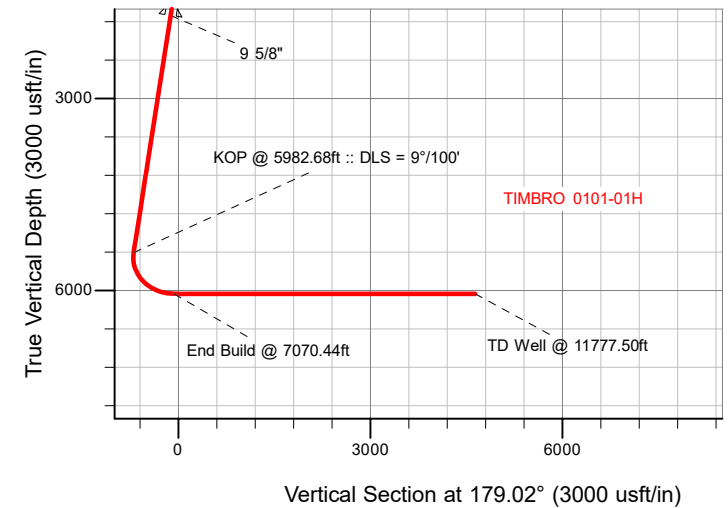
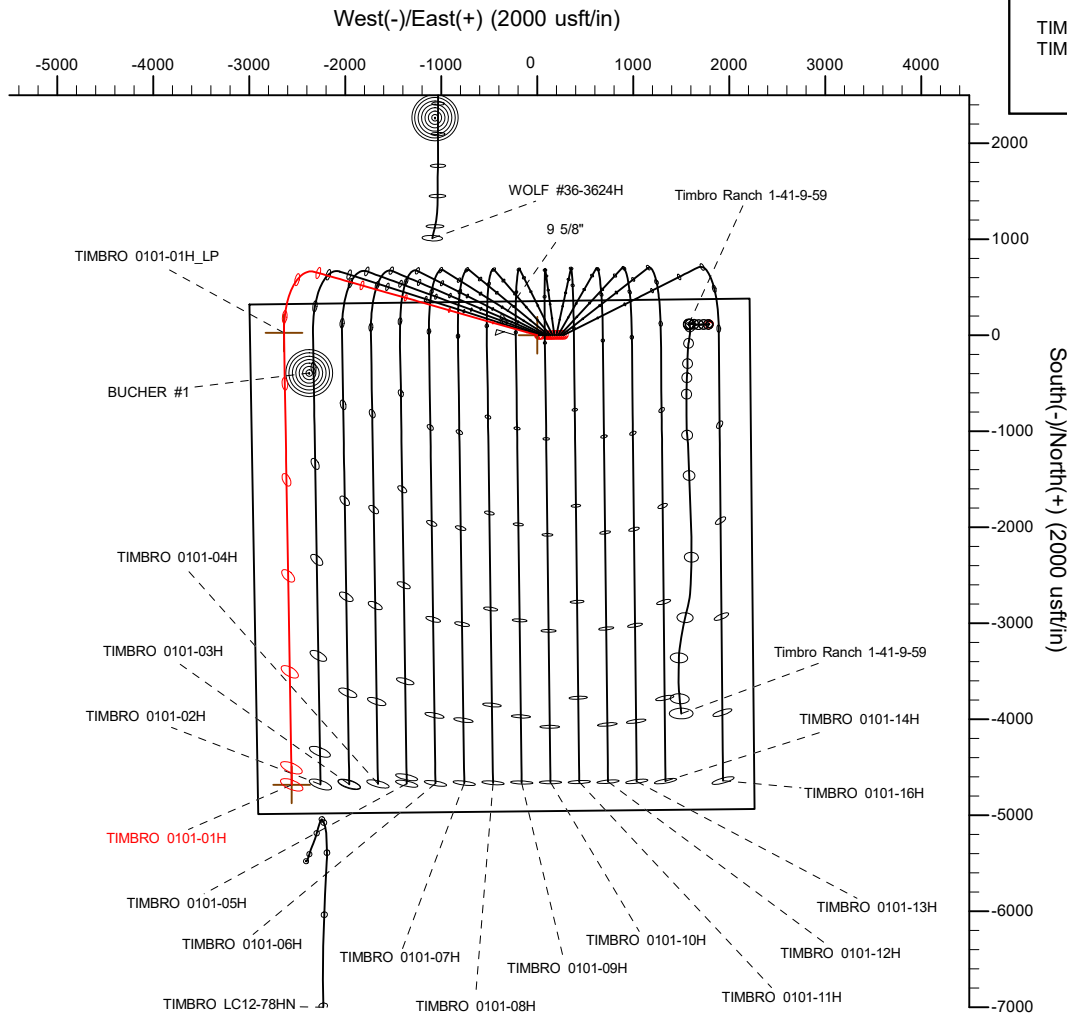
TVD	MD	Name	Size
1700.00	1776.00	9 5/8"	9-5/8

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0.00	0.00	0.00	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	
1612.00	28.24	285.90	1555.52	93.42	-327.94	2.00	285.90	-99.01	
5982.68	28.24	285.90	5405.97	659.98	-2316.88	0.00	0.00	-699.51	
7070.44	90.00	179.02	6050.00	23.81	-2636.99	9.00	-104.97	-68.91	
11777.50	90.00	179.02	6050.00	-4682.55	-2556.18	0.00	0.00	4638.15	TIMBRO 0101-01H_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
TIMBRO 0101-01H_SHL	0.00	0.00	0.00	40.786474	-103.925326
TIMBRO 0101-01H_BHL	6050.00	-4682.55	-2556.18	40.773621	-103.934554



WELL DETAILS: TIMBRO 0101-01H

GL = 4947'

RKB = 24' @ 4971.00usft (RIG)

Plan: Design #1 (TIMBRO 0101-01H/Wellbore #1)

Date: 5/21/2019

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Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well TIMBRO 0101-01H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4971.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4971.00usft (RIG)
Site:	9N-59W-01 TIMBRO 0101 PAD	North Reference:	True
Well:	TIMBRO 0101-01H	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 0101-01H			
Well Position	+N/-S	0.00 usft	Northing:	1,533,230.40 usft
	+E/-W	0.00 usft	Easting:	3,436,039.96 usft
Position Uncertainty		3.28 usft	Wellhead Elevation:	Latitude: 40.786474
				Longitude: -103.925326
				Ground Level: 4,947.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/20/2019	7.58	67.24	52,454.93152690

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	179.02

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	11,777.50	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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,612.00	28.24	285.90	1,555.52	93.42	-327.94	2.00	2.00	0.00	285.90	
5,982.68	28.24	285.90	5,405.97	659.98	-2,316.88	0.00	0.00	0.00	0.00	
7,070.44	90.00	179.02	6,050.00	23.81	-2,636.99	9.00	5.68	-9.83	-104.97	
11,777.50	90.00	179.02	6,050.00	-4,682.55	-2,556.18	0.00	0.00	0.00	0.00	TIMBRO 0101-01H_E

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Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well TIMBRO 0101-01H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4971.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4971.00usft (RIG)
Site:	9N-59W-01 TIMBRO 0101 PAD	North Reference:	True
Well:	TIMBRO 0101-01H	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
Begin Nudge @ 200.00ft									
300.00	2.00	285.90	299.98	0.48	-1.68	-0.51	2.00	2.00	0.00
400.00	4.00	285.90	399.84	1.91	-6.71	-2.03	2.00	2.00	0.00
500.00	6.00	285.90	499.45	4.30	-15.09	-4.56	2.00	2.00	0.00
600.00	8.00	285.90	598.70	7.64	-26.81	-8.10	2.00	2.00	0.00
700.00	10.00	285.90	697.47	11.92	-41.86	-12.64	2.00	2.00	0.00
800.00	12.00	285.90	795.62	17.15	-60.21	-18.18	2.00	2.00	0.00
900.00	14.00	285.90	893.06	23.31	-81.84	-24.71	2.00	2.00	0.00
1,000.00	16.00	285.90	989.64	30.40	-106.73	-32.22	2.00	2.00	0.00
1,100.00	18.00	285.90	1,085.27	38.41	-134.85	-40.71	2.00	2.00	0.00
1,200.00	20.00	285.90	1,179.82	47.33	-166.16	-50.17	2.00	2.00	0.00
1,300.00	22.00	285.90	1,273.17	57.15	-200.62	-60.57	2.00	2.00	0.00
1,400.00	24.00	285.90	1,365.21	67.85	-238.20	-71.92	2.00	2.00	0.00
1,500.00	26.00	285.90	1,455.84	79.43	-278.84	-84.19	2.00	2.00	0.00
1,600.00	28.00	285.90	1,544.94	91.87	-322.50	-97.37	2.00	2.00	0.00
1,612.00	28.24	285.90	1,555.52	93.42	-327.94	-99.01	2.00	2.00	0.00
Hold Tangent @ 1612.00ft									
1,700.00	28.24	285.90	1,633.05	104.82	-367.99	-111.10	0.00	0.00	0.00
1,776.00	28.24	285.90	1,700.00	114.68	-402.57	-121.54	0.00	0.00	0.00
9 5/8"									
1,800.00	28.24	285.90	1,721.14	117.79	-413.49	-124.84	0.00	0.00	0.00
1,900.00	28.24	285.90	1,809.24	130.75	-459.00	-138.58	0.00	0.00	0.00
2,000.00	28.24	285.90	1,897.34	143.71	-504.51	-152.32	0.00	0.00	0.00
2,100.00	28.24	285.90	1,985.44	156.67	-550.01	-166.06	0.00	0.00	0.00
2,200.00	28.24	285.90	2,073.53	169.64	-595.52	-179.80	0.00	0.00	0.00
2,300.00	28.24	285.90	2,161.63	182.60	-641.02	-193.54	0.00	0.00	0.00
2,400.00	28.24	285.90	2,249.73	195.56	-686.53	-207.28	0.00	0.00	0.00
2,500.00	28.24	285.90	2,337.82	208.53	-732.04	-221.02	0.00	0.00	0.00
2,600.00	28.24	285.90	2,425.92	221.49	-777.54	-234.76	0.00	0.00	0.00
2,700.00	28.24	285.90	2,514.02	234.45	-823.05	-248.49	0.00	0.00	0.00
2,800.00	28.24	285.90	2,602.12	247.41	-868.56	-262.23	0.00	0.00	0.00
2,900.00	28.24	285.90	2,690.21	260.38	-914.06	-275.97	0.00	0.00	0.00
3,000.00	28.24	285.90	2,778.31	273.34	-959.57	-289.71	0.00	0.00	0.00
3,100.00	28.24	285.90	2,866.41	286.30	-1,005.07	-303.45	0.00	0.00	0.00
3,200.00	28.24	285.90	2,954.51	299.27	-1,050.58	-317.19	0.00	0.00	0.00
3,300.00	28.24	285.90	3,042.60	312.23	-1,096.09	-330.93	0.00	0.00	0.00
3,400.00	28.24	285.90	3,130.70	325.19	-1,141.59	-344.67	0.00	0.00	0.00
3,500.00	28.24	285.90	3,218.80	338.15	-1,187.10	-358.41	0.00	0.00	0.00
3,600.00	28.24	285.90	3,306.90	351.12	-1,232.61	-372.15	0.00	0.00	0.00
3,700.00	28.24	285.90	3,394.99	364.08	-1,278.11	-385.89	0.00	0.00	0.00
3,800.00	28.24	285.90	3,483.09	377.04	-1,323.62	-399.63	0.00	0.00	0.00
3,900.00	28.24	285.90	3,571.19	390.01	-1,369.13	-413.37	0.00	0.00	0.00
4,000.00	28.24	285.90	3,659.28	402.97	-1,414.63	-427.10	0.00	0.00	0.00
4,100.00	28.24	285.90	3,747.38	415.93	-1,460.14	-440.84	0.00	0.00	0.00
4,200.00	28.24	285.90	3,835.48	428.89	-1,505.64	-454.58	0.00	0.00	0.00
4,300.00	28.24	285.90	3,923.58	441.86	-1,551.15	-468.32	0.00	0.00	0.00
4,400.00	28.24	285.90	4,011.67	454.82	-1,596.66	-482.06	0.00	0.00	0.00
4,500.00	28.24	285.90	4,099.77	467.78	-1,642.16	-495.80	0.00	0.00	0.00
4,600.00	28.24	285.90	4,187.87	480.75	-1,687.67	-509.54	0.00	0.00	0.00
4,700.00	28.24	285.90	4,275.97	493.71	-1,733.18	-523.28	0.00	0.00	0.00

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Planning Report

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Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4971.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4971.00usft (RIG)
Site:	9N-59W-01 TIMBRO 0101 PAD	North Reference:	True
Well:	TIMBRO 0101-01H	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)
4,800.00	28.24	285.90	4,364.06	506.67	-1,778.68	-537.02	0.00	0.00	0.00
4,900.00	28.24	285.90	4,452.16	519.63	-1,824.19	-550.76	0.00	0.00	0.00
5,000.00	28.24	285.90	4,540.26	532.60	-1,869.69	-564.50	0.00	0.00	0.00
5,100.00	28.24	285.90	4,628.36	545.56	-1,915.20	-578.24	0.00	0.00	0.00
5,200.00	28.24	285.90	4,716.45	558.52	-1,960.71	-591.98	0.00	0.00	0.00
5,300.00	28.24	285.90	4,804.55	571.49	-2,006.21	-605.71	0.00	0.00	0.00
5,400.00	28.24	285.90	4,892.65	584.45	-2,051.72	-619.45	0.00	0.00	0.00
5,500.00	28.24	285.90	4,980.74	597.41	-2,097.23	-633.19	0.00	0.00	0.00
5,600.00	28.24	285.90	5,068.84	610.37	-2,142.73	-646.93	0.00	0.00	0.00
5,700.00	28.24	285.90	5,156.94	623.34	-2,188.24	-660.67	0.00	0.00	0.00
5,800.00	28.24	285.90	5,245.04	636.30	-2,233.75	-674.41	0.00	0.00	0.00
5,900.00	28.24	285.90	5,333.13	649.26	-2,279.25	-688.15	0.00	0.00	0.00
5,982.68	28.24	285.90	5,405.97	659.98	-2,316.88	-699.51	0.00	0.00	0.00
KOP @ 5982.68ft :: DLS = 9°/100'									
6,000.00	27.87	282.68	5,421.26	661.99	-2,324.77	-701.66	9.00	-2.11	-18.60
6,100.00	27.32	263.21	5,510.06	664.41	-2,370.46	-704.86	9.00	-0.55	-19.47
6,200.00	29.42	244.72	5,598.22	651.19	-2,415.54	-692.41	9.00	2.10	-18.49
6,300.00	33.67	229.50	5,683.56	622.63	-2,458.92	-664.60	9.00	4.25	-15.22
6,400.00	39.39	217.77	5,763.98	579.46	-2,499.52	-622.13	9.00	5.71	-11.73
6,500.00	46.01	208.76	5,837.50	522.73	-2,536.33	-566.03	9.00	6.62	-9.01
6,600.00	53.20	201.63	5,902.31	453.83	-2,568.46	-497.69	9.00	7.19	-7.13
6,700.00	60.74	195.75	5,956.82	374.47	-2,595.12	-418.80	9.00	7.54	-5.88
6,800.00	68.50	190.70	5,999.67	286.60	-2,615.64	-331.29	9.00	7.76	-5.05
6,900.00	76.39	186.16	6,029.83	192.38	-2,629.52	-237.32	9.00	7.90	-4.54
7,000.00	84.36	181.92	6,046.54	94.13	-2,636.42	-139.21	9.00	7.97	-4.24
7,070.44	90.00	179.02	6,050.00	23.81	-2,636.99	-68.91	9.00	8.00	-4.13
End Build @ 7070.44ft									
7,100.00	90.00	179.02	6,050.00	-5.74	-2,636.49	-39.35	0.00	0.00	0.00
7,200.00	90.00	179.02	6,050.00	-105.73	-2,634.77	60.65	0.00	0.00	0.00
7,300.00	90.00	179.02	6,050.00	-205.71	-2,633.05	160.65	0.00	0.00	0.00
7,400.00	90.00	179.02	6,050.00	-305.70	-2,631.34	260.65	0.00	0.00	0.00
7,500.00	90.00	179.02	6,050.00	-405.68	-2,629.62	360.65	0.00	0.00	0.00
7,600.00	90.00	179.02	6,050.00	-505.67	-2,627.90	460.65	0.00	0.00	0.00
7,700.00	90.00	179.02	6,050.00	-605.65	-2,626.19	560.65	0.00	0.00	0.00
7,800.00	90.00	179.02	6,050.00	-705.64	-2,624.47	660.65	0.00	0.00	0.00
7,900.00	90.00	179.02	6,050.00	-805.62	-2,622.75	760.65	0.00	0.00	0.00
8,000.00	90.00	179.02	6,050.00	-905.61	-2,621.03	860.65	0.00	0.00	0.00
8,100.00	90.00	179.02	6,050.00	-1,005.60	-2,619.32	960.65	0.00	0.00	0.00
8,200.00	90.00	179.02	6,050.00	-1,105.58	-2,617.60	1,060.65	0.00	0.00	0.00
8,300.00	90.00	179.02	6,050.00	-1,205.57	-2,615.88	1,160.65	0.00	0.00	0.00
8,400.00	90.00	179.02	6,050.00	-1,305.55	-2,614.17	1,260.65	0.00	0.00	0.00
8,500.00	90.00	179.02	6,050.00	-1,405.54	-2,612.45	1,360.65	0.00	0.00	0.00
8,600.00	90.00	179.02	6,050.00	-1,505.52	-2,610.73	1,460.65	0.00	0.00	0.00
8,700.00	90.00	179.02	6,050.00	-1,605.51	-2,609.02	1,560.65	0.00	0.00	0.00
8,800.00	90.00	179.02	6,050.00	-1,705.49	-2,607.30	1,660.65	0.00	0.00	0.00
8,900.00	90.00	179.02	6,050.00	-1,805.48	-2,605.58	1,760.65	0.00	0.00	0.00
9,000.00	90.00	179.02	6,050.00	-1,905.46	-2,603.87	1,860.65	0.00	0.00	0.00
9,100.00	90.00	179.02	6,050.00	-2,005.45	-2,602.15	1,960.65	0.00	0.00	0.00
9,200.00	90.00	179.02	6,050.00	-2,105.43	-2,600.43	2,060.65	0.00	0.00	0.00
9,300.00	90.00	179.02	6,050.00	-2,205.42	-2,598.71	2,160.65	0.00	0.00	0.00
9,400.00	90.00	179.02	6,050.00	-2,305.40	-2,597.00	2,260.65	0.00	0.00	0.00
9,500.00	90.00	179.02	6,050.00	-2,405.39	-2,595.28	2,360.65	0.00	0.00	0.00
9,600.00	90.00	179.02	6,050.00	-2,505.37	-2,593.56	2,460.65	0.00	0.00	0.00
9,700.00	90.00	179.02	6,050.00	-2,605.36	-2,591.85	2,560.65	0.00	0.00	0.00

Hewlett-Packard

Planning Report

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Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4971.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4971.00usft (RIG)
Site:	9N-59W-01 TIMBRO 0101 PAD	North Reference:	True
Well:	TIMBRO 0101-01H	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)	
9,800.00	90.00	179.02	6,050.00	-2,705.34	-2,590.13	2,660.65	0.00	0.00	0.00	
9,900.00	90.00	179.02	6,050.00	-2,805.33	-2,588.41	2,760.65	0.00	0.00	0.00	
10,000.00	90.00	179.02	6,050.00	-2,905.32	-2,586.70	2,860.65	0.00	0.00	0.00	
10,100.00	90.00	179.02	6,050.00	-3,005.30	-2,584.98	2,960.65	0.00	0.00	0.00	
10,200.00	90.00	179.02	6,050.00	-3,105.29	-2,583.26	3,060.65	0.00	0.00	0.00	
10,300.00	90.00	179.02	6,050.00	-3,205.27	-2,581.55	3,160.65	0.00	0.00	0.00	
10,400.00	90.00	179.02	6,050.00	-3,305.26	-2,579.83	3,260.65	0.00	0.00	0.00	
10,500.00	90.00	179.02	6,050.00	-3,405.24	-2,578.11	3,360.65	0.00	0.00	0.00	
10,600.00	90.00	179.02	6,050.00	-3,505.23	-2,576.39	3,460.65	0.00	0.00	0.00	
10,700.00	90.00	179.02	6,050.00	-3,605.21	-2,574.68	3,560.65	0.00	0.00	0.00	
10,800.00	90.00	179.02	6,050.00	-3,705.20	-2,572.96	3,660.65	0.00	0.00	0.00	
10,900.00	90.00	179.02	6,050.00	-3,805.18	-2,571.24	3,760.65	0.00	0.00	0.00	
11,000.00	90.00	179.02	6,050.00	-3,905.17	-2,569.53	3,860.65	0.00	0.00	0.00	
11,100.00	90.00	179.02	6,050.00	-4,005.15	-2,567.81	3,960.65	0.00	0.00	0.00	
11,200.00	90.00	179.02	6,050.00	-4,105.14	-2,566.09	4,060.65	0.00	0.00	0.00	
11,300.00	90.00	179.02	6,050.00	-4,205.12	-2,564.38	4,160.65	0.00	0.00	0.00	
11,400.00	90.00	179.02	6,050.00	-4,305.11	-2,562.66	4,260.65	0.00	0.00	0.00	
11,500.00	90.00	179.02	6,050.00	-4,405.09	-2,560.94	4,360.65	0.00	0.00	0.00	
11,600.00	90.00	179.02	6,050.00	-4,505.08	-2,559.23	4,460.65	0.00	0.00	0.00	
11,700.00	90.00	179.02	6,050.00	-4,605.06	-2,557.51	4,560.65	0.00	0.00	0.00	
11,777.50	90.00	179.02	6,050.00	-4,682.55	-2,556.18	4,638.15	0.00	0.00	0.00	
TD Well @ 11777.50ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")
1,776.00	1,700.00	9 5/8"		9-5/8	13-1/2

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
200.00	200.00	0.00	0.00	Begin Nudge @ 200.00ft	
1,612.00	1,555.52	93.42	-327.94	Hold Tangent @ 1612.00ft	
5,982.68	5,405.97	659.98	-2,316.88	KOP @ 5982.68ft :: DLS = 9°/100'	
7,070.44	6,050.00	23.81	-2,636.99	End Build @ 7070.44ft	
11,777.50	6,050.00	-4,682.55	-2,556.18	TD Well @ 11777.50ft	