

VERDAD RESOURCES

**WATTENBERG FIELD
2N-64W-24 ARNOLD PAD
HELEN 2536-05H**

Plan B

Plan: Design #2

Standard Planning Report

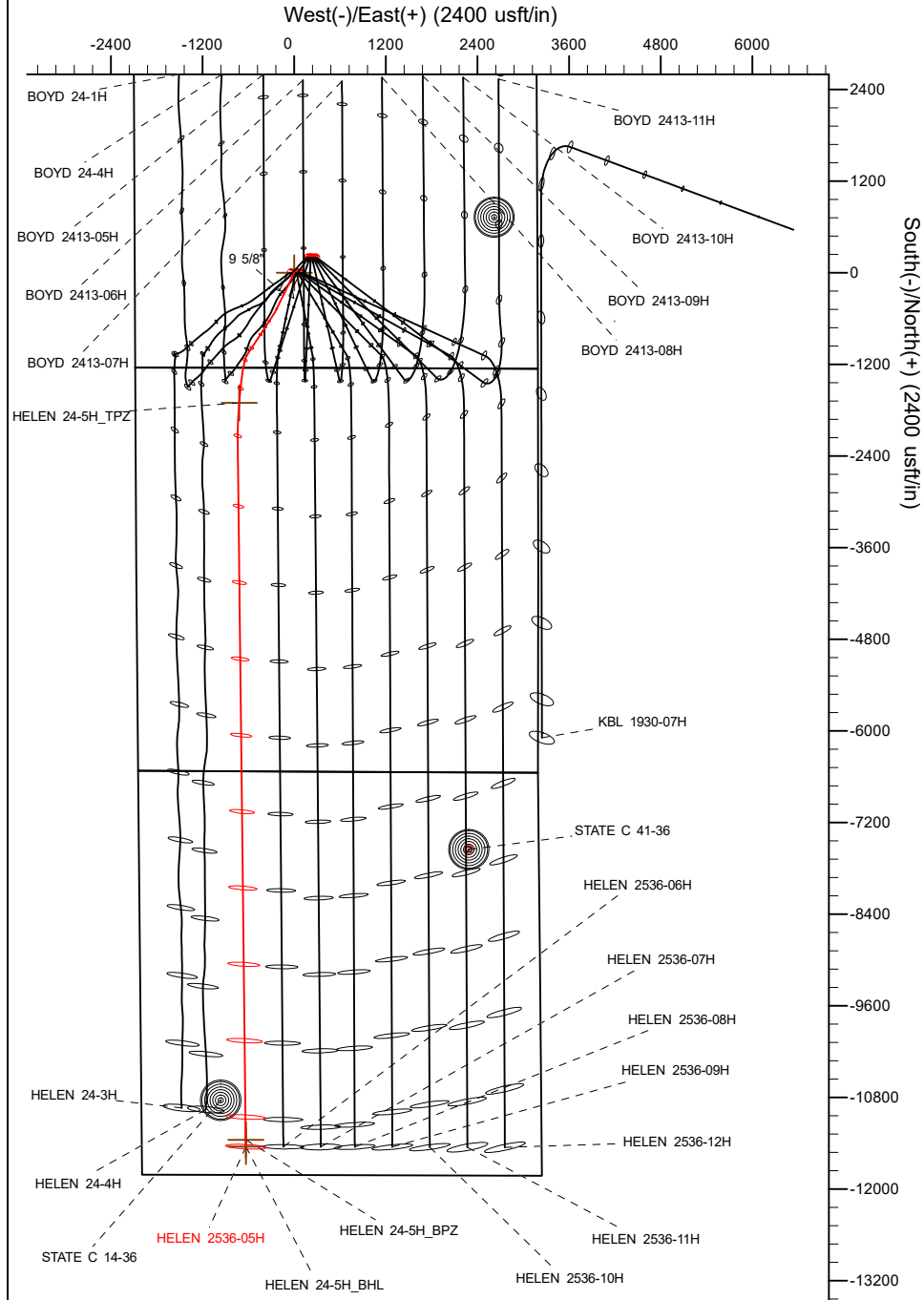
14 December, 2021

Project: WATTENBERG FIELD
Site: 2N-64W-24 ARNOLD PAD
Well: HELEN 2536-05H
Wellbore: Plan B
Design: Design #2

VERDAD RESOURCES

CASING DETAILS

TVD	MD	Name	Size
1908.00	1937.62	9 5/8"	9-5/8



SHL
1243' FSL
2089' FWL

TPZ
460' FNL
1361' FWL

BPZ
460' FSL
1361' FWL

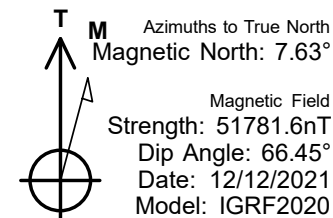
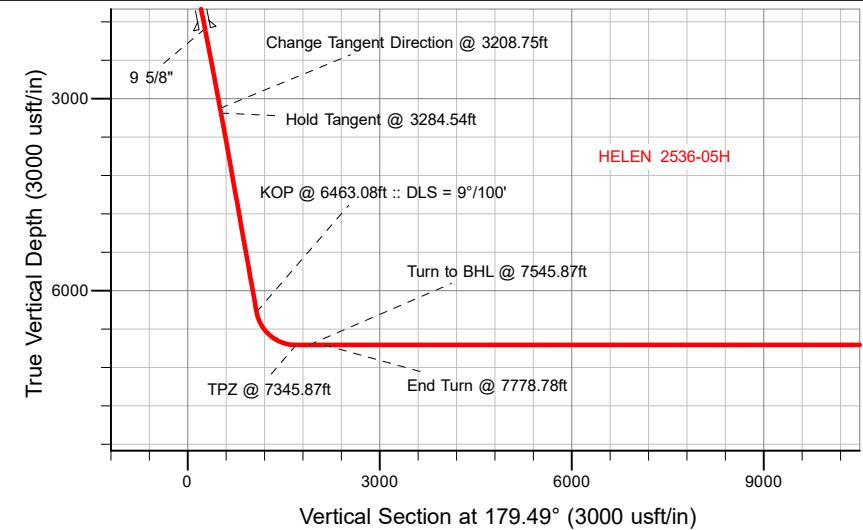
BHL
370' FSL
1361' FWL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	203.25	0.00	0.00	203.25	0.00	0.00	0.00	0.00	0.00	
3	808.75	12.11	206.00	804.25	-57.30	-27.95	2.00	206.00	57.05	
4	3208.75	12.11	206.00	3150.84	-509.84	-248.66	0.00	0.00	507.60	
5	3284.54	12.11	213.23	3224.95	-523.63	-256.51	2.00	93.53	521.33	
6	6463.08	12.11	213.23	6332.76	-1081.42	-621.93	0.00	0.00	1075.84	
7	7345.87	90.00	184.00	6850.00	-1701.97	-719.65	9.00	-29.78	1695.50	
8	7545.87	90.00	184.00	6850.00	-1901.48	-733.60	0.00	0.00	1894.88	
9	7778.78	90.00	179.34	6850.00	-2134.23	-740.39	2.00	-90.00	2127.56	
10	17088.21	90.00	179.34	6850.00	-11443.05	-633.44	0.00	0.00	11436.96	HELEN 24-5H_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
HELEN 24-5H_SHL	0.00	0.00	0.00	40.120058	-104.501662
HELEN 24-5H_TPZ	6850.00	-1701.97	-719.65	40.115386	-104.504235
HELEN 24-5H_BPZ	6850.00	-11353.07	-634.28	40.088892	-104.503929
HELEN 24-5H_BHL	6850.00	-11443.05	-633.44	40.088645	-104.503926



WELL DETAILS: HELEN 2536-05H

GL = 4924'

RKB = 20' @ 4944.00usft (Drilling Rig)

Plan: Design #2 (HELEN 2536-05H/Plan B)

Date: 12/14/2021

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well HELEN 2536-05H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 20' @ 4944.00usft (Drilling Rig)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 20' @ 4944.00usft (Drilling Rig)
Site:	2N-64W-24 ARNOLD PAD	North Reference:	True
Well:	HELEN 2536-05H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
Design:	Design #2		

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		2N-64W-24 ARNOLD PAD			
Site Position:		Northing:	1,288,352.75 usft	Latitude:	40.120602
From:	Lat/Long	Easting:	3,279,352.74 usft	Longitude:	-104.501071
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "		

Well		HELEN 2536-05H				
Well Position	+N/-S	0.00 usft	Northing:	1,288,152.73 usft	Latitude:	40.120058
	+E/-W	0.00 usft	Easting:	3,279,189.70 usft	Longitude:	-104.501662
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	4,924.00 usft
Grid Convergence:		0.65 °				

Wellbore	Plan B				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF202013	12/12/2021	7.63	66.45	51,781.63219319

Design	Design #2				
Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	6,850.00	0.00	0.00	179.49	

Plan Survey Tool Program	Date	12/14/2021			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	1,908.00	Design #2 (Plan B)	ISCWSA MWD	
				Fixed:v2:standard declination	
2	1,908.00	17,088.21	Design #2 (Plan B)	ISCWSA MWD	
				Fixed:v2:standard declination	

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Site:	2N-64W-24 ARNOLD PAD	North Reference:	True
Well:	HELEN 2536-05H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
Design:	Design #2		

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	
203.25	0.00	0.00	203.25	0.00	0.00	0.00	0.00	0.00	0.00	
808.75	12.11	206.00	804.25	-57.30	-27.95	2.00	2.00	0.00	206.00	
3,208.75	12.11	206.00	3,150.84	-509.84	-248.66	0.00	0.00	0.00	0.00	
3,284.54	12.11	213.23	3,224.95	-523.63	-256.51	2.00	0.00	9.54	93.53	
6,463.08	12.11	213.23	6,332.76	-1,081.42	-621.93	0.00	0.00	0.00	0.00	
7,345.87	90.00	184.00	6,850.00	-1,701.97	-719.65	9.00	8.82	-3.31	-29.78	
7,545.87	90.00	184.00	6,850.00	-1,901.48	-733.60	0.00	0.00	0.00	0.00	
7,778.78	90.00	179.34	6,850.00	-2,134.23	-740.39	2.00	0.00	-2.00	-90.00	
17,088.21	90.00	179.34	6,850.00	-11,443.05	-633.44	0.00	0.00	0.00	0.00	HELEN 24-5H_BHL

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well HELEN 2536-05H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 20' @ 4944.00usft (Drilling Rig)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 20' @ 4944.00usft (Drilling Rig)
Site:	2N-64W-24 ARNOLD PAD	North Reference:	True
Well:	HELEN 2536-05H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
Design:	Design #2		

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
203.25	0.00	0.00	203.25	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 203.25ft									
300.00	1.93	206.00	299.98	-1.47	-0.72	1.46	2.00	2.00	0.00
400.00	3.93	206.00	399.85	-6.07	-2.96	6.04	2.00	2.00	0.00
500.00	5.93	206.00	499.47	-13.80	-6.73	13.74	2.00	2.00	0.00
600.00	7.93	206.00	598.73	-24.65	-12.02	24.55	2.00	2.00	0.00
700.00	9.93	206.00	697.51	-38.61	-18.83	38.44	2.00	2.00	0.00
808.75	12.11	206.00	804.25	-57.30	-27.95	57.05	2.00	2.00	0.00
Hold Tangent @ 808.75ft									
900.00	12.11	206.00	893.47	-74.51	-36.34	74.18	0.00	0.00	0.00
1,000.00	12.11	206.00	991.25	-93.36	-45.54	92.95	0.00	0.00	0.00
1,100.00	12.11	206.00	1,089.02	-112.22	-54.73	111.72	0.00	0.00	0.00
1,200.00	12.11	206.00	1,186.80	-131.07	-63.93	130.50	0.00	0.00	0.00
1,300.00	12.11	206.00	1,284.57	-149.93	-73.12	149.27	0.00	0.00	0.00
1,400.00	12.11	206.00	1,382.34	-168.78	-82.32	168.04	0.00	0.00	0.00
1,500.00	12.11	206.00	1,480.12	-187.64	-91.52	186.82	0.00	0.00	0.00
1,600.00	12.11	206.00	1,577.89	-206.50	-100.71	205.59	0.00	0.00	0.00
1,700.00	12.11	206.00	1,675.67	-225.35	-109.91	224.36	0.00	0.00	0.00
1,800.00	12.11	206.00	1,773.44	-244.21	-119.11	243.14	0.00	0.00	0.00
1,900.00	12.11	206.00	1,871.22	-263.06	-128.30	261.91	0.00	0.00	0.00
1,937.62	12.11	206.00	1,908.00	-270.16	-131.76	268.97	0.00	0.00	0.00
9 5/8"									
2,000.00	12.11	206.00	1,968.99	-281.92	-137.50	280.68	0.00	0.00	0.00
2,100.00	12.11	206.00	2,066.77	-300.77	-146.70	299.46	0.00	0.00	0.00
2,200.00	12.11	206.00	2,164.54	-319.63	-155.89	318.23	0.00	0.00	0.00
2,300.00	12.11	206.00	2,262.32	-338.49	-165.09	337.00	0.00	0.00	0.00
2,400.00	12.11	206.00	2,360.09	-357.34	-174.29	355.78	0.00	0.00	0.00
2,500.00	12.11	206.00	2,457.87	-376.20	-183.48	374.55	0.00	0.00	0.00
2,600.00	12.11	206.00	2,555.64	-395.05	-192.68	393.32	0.00	0.00	0.00
2,700.00	12.11	206.00	2,653.42	-413.91	-201.88	412.09	0.00	0.00	0.00
2,800.00	12.11	206.00	2,751.19	-432.76	-211.07	430.87	0.00	0.00	0.00
2,900.00	12.11	206.00	2,848.96	-451.62	-220.27	449.64	0.00	0.00	0.00
3,000.00	12.11	206.00	2,946.74	-470.48	-229.47	468.41	0.00	0.00	0.00
3,100.00	12.11	206.00	3,044.51	-489.33	-238.66	487.19	0.00	0.00	0.00
3,208.75	12.11	206.00	3,150.84	-509.84	-248.66	507.60	0.00	0.00	0.00
Change Tangent Direction @ 3208.75ft									
3,284.54	12.11	213.23	3,224.95	-523.63	-256.51	521.33	2.00	0.00	9.54
Hold Tangent @ 3284.54ft									
3,300.00	12.11	213.23	3,240.07	-526.35	-258.28	524.03	0.00	0.00	0.00
3,400.00	12.11	213.23	3,337.84	-543.89	-269.78	541.47	0.00	0.00	0.00
3,500.00	12.11	213.23	3,435.62	-561.44	-281.28	558.92	0.00	0.00	0.00
3,600.00	12.11	213.23	3,533.39	-578.99	-292.77	576.36	0.00	0.00	0.00
3,700.00	12.11	213.23	3,631.17	-596.54	-304.27	593.81	0.00	0.00	0.00
3,800.00	12.11	213.23	3,728.94	-614.09	-315.77	611.25	0.00	0.00	0.00
3,900.00	12.11	213.23	3,826.72	-631.64	-327.26	628.70	0.00	0.00	0.00
4,000.00	12.11	213.23	3,924.49	-649.18	-338.76	646.14	0.00	0.00	0.00
4,100.00	12.11	213.23	4,022.26	-666.73	-350.26	663.59	0.00	0.00	0.00
4,200.00	12.11	213.23	4,120.04	-684.28	-361.75	681.03	0.00	0.00	0.00
4,300.00	12.11	213.23	4,217.81	-701.83	-373.25	698.48	0.00	0.00	0.00
4,400.00	12.11	213.23	4,315.59	-719.38	-384.74	715.93	0.00	0.00	0.00
4,500.00	12.11	213.23	4,413.36	-736.93	-396.24	733.37	0.00	0.00	0.00
4,600.00	12.11	213.23	4,511.14	-754.47	-407.74	750.82	0.00	0.00	0.00

Planning Report

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Company:	VERDAD RESOURCES	TVD Reference:	RKB = 20' @ 4944.00usft (Drilling Rig)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 20' @ 4944.00usft (Drilling Rig)
Site:	2N-64W-24 ARNOLD PAD	North Reference:	True
Well:	HELEN 2536-05H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
Design:	Design #2		

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	12.11	213.23	4,608.91	-772.02	-419.23	768.26	0.00	0.00	0.00
4,800.00	12.11	213.23	4,706.69	-789.57	-430.73	785.71	0.00	0.00	0.00
4,900.00	12.11	213.23	4,804.46	-807.12	-442.23	803.15	0.00	0.00	0.00
5,000.00	12.11	213.23	4,902.24	-824.67	-453.72	820.60	0.00	0.00	0.00
5,100.00	12.11	213.23	5,000.01	-842.22	-465.22	838.04	0.00	0.00	0.00
5,200.00	12.11	213.23	5,097.79	-859.77	-476.72	855.49	0.00	0.00	0.00
5,300.00	12.11	213.23	5,195.56	-877.31	-488.21	872.93	0.00	0.00	0.00
5,400.00	12.11	213.23	5,293.34	-894.86	-499.71	890.38	0.00	0.00	0.00
5,500.00	12.11	213.23	5,391.11	-912.41	-511.21	907.82	0.00	0.00	0.00
5,600.00	12.11	213.23	5,488.88	-929.96	-522.70	925.27	0.00	0.00	0.00
5,700.00	12.11	213.23	5,586.66	-947.51	-534.20	942.71	0.00	0.00	0.00
5,800.00	12.11	213.23	5,684.43	-965.06	-545.70	960.16	0.00	0.00	0.00
5,900.00	12.11	213.23	5,782.21	-982.60	-557.19	977.61	0.00	0.00	0.00
6,000.00	12.11	213.23	5,879.98	-1,000.15	-568.69	995.05	0.00	0.00	0.00
6,100.00	12.11	213.23	5,977.76	-1,017.70	-580.18	1,012.50	0.00	0.00	0.00
6,200.00	12.11	213.23	6,075.53	-1,035.25	-591.68	1,029.94	0.00	0.00	0.00
6,300.00	12.11	213.23	6,173.31	-1,052.80	-603.18	1,047.39	0.00	0.00	0.00
6,400.00	12.11	213.23	6,271.08	-1,070.35	-614.67	1,064.83	0.00	0.00	0.00
6,463.08	12.11	213.23	6,332.76	-1,081.42	-621.93	1,075.84	0.00	0.00	0.00
KOP @ 6463.08ft :: DLS = 9°/100'									
6,500.00	15.08	206.88	6,368.64	-1,088.94	-626.22	1,083.32	9.00	8.05	-17.20
6,550.00	19.29	201.42	6,416.40	-1,102.44	-632.18	1,096.77	9.00	8.41	-10.92
6,600.00	23.60	197.88	6,462.93	-1,119.66	-638.27	1,113.94	9.00	8.62	-7.09
6,650.00	27.97	195.38	6,507.94	-1,140.50	-644.46	1,134.72	9.00	8.74	-4.99
6,700.00	32.37	193.51	6,551.16	-1,164.83	-650.70	1,159.00	9.00	8.80	-3.73
6,750.00	36.79	192.05	6,592.32	-1,192.51	-656.96	1,186.61	9.00	8.85	-2.92
6,800.00	41.23	190.87	6,631.16	-1,223.35	-663.19	1,217.39	9.00	8.88	-2.37
6,850.00	45.68	189.87	6,667.45	-1,257.17	-669.37	1,251.16	9.00	8.90	-1.99
6,900.00	50.13	189.02	6,700.96	-1,293.76	-675.45	1,287.69	9.00	8.91	-1.71
6,950.00	54.60	188.27	6,731.48	-1,332.89	-681.39	1,326.78	9.00	8.92	-1.50
7,000.00	59.06	187.60	6,758.83	-1,374.34	-687.16	1,368.16	9.00	8.93	-1.34
7,050.00	63.53	186.99	6,782.84	-1,417.82	-692.72	1,411.60	9.00	8.94	-1.22
7,100.00	68.00	186.43	6,803.36	-1,463.09	-698.04	1,456.82	9.00	8.94	-1.13
7,150.00	72.47	185.90	6,820.27	-1,509.86	-703.09	1,503.55	9.00	8.94	-1.06
7,200.00	76.94	185.39	6,833.45	-1,557.85	-707.83	1,551.49	9.00	8.95	-1.01
7,250.00	81.42	184.91	6,842.83	-1,606.75	-712.23	1,600.35	9.00	8.95	-0.97
7,300.00	85.89	184.43	6,848.35	-1,656.27	-716.28	1,649.82	9.00	8.95	-0.95
7,345.87	90.00	184.00	6,850.00	-1,701.97	-719.65	1,695.50	9.00	8.95	-0.94
TPZ @ 7345.87ft									
7,400.00	90.00	184.00	6,850.00	-1,755.97	-723.42	1,749.46	0.00	0.00	0.00
7,500.00	90.00	184.00	6,850.00	-1,855.73	-730.40	1,849.15	0.00	0.00	0.00
7,545.87	90.00	184.00	6,850.00	-1,901.48	-733.60	1,894.88	0.00	0.00	0.00
Turn to BHL @ 7545.87ft									
7,600.00	90.00	182.92	6,850.00	-1,955.52	-736.86	1,948.88	2.00	0.00	-2.00
7,700.00	90.00	180.92	6,850.00	-2,055.45	-740.21	2,048.78	2.00	0.00	-2.00
7,778.78	90.00	179.34	6,850.00	-2,134.23	-740.39	2,127.56	2.00	0.00	-2.00
End Turn @ 7778.78ft									
7,800.00	90.00	179.34	6,850.00	-2,155.45	-740.14	2,148.78	0.00	0.00	0.00
7,900.00	90.00	179.34	6,850.00	-2,255.44	-738.99	2,248.78	0.00	0.00	0.00
8,000.00	90.00	179.34	6,850.00	-2,355.44	-737.85	2,348.78	0.00	0.00	0.00
8,100.00	90.00	179.34	6,850.00	-2,455.43	-736.70	2,448.78	0.00	0.00	0.00
8,200.00	90.00	179.34	6,850.00	-2,555.42	-735.55	2,548.78	0.00	0.00	0.00
8,300.00	90.00	179.34	6,850.00	-2,655.42	-734.40	2,648.77	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well HELEN 2536-05H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 20' @ 4944.00usft (Drilling Rig)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 20' @ 4944.00usft (Drilling Rig)
Site:	2N-64W-24 ARNOLD PAD	North Reference:	True
Well:	HELEN 2536-05H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
Design:	Design #2		

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)	
8,400.00	90.00	179.34	6,850.00	-2,755.41	-733.25	2,748.77	0.00	0.00	0.00	
8,500.00	90.00	179.34	6,850.00	-2,855.40	-732.10	2,848.77	0.00	0.00	0.00	
8,600.00	90.00	179.34	6,850.00	-2,955.40	-730.95	2,948.77	0.00	0.00	0.00	
8,700.00	90.00	179.34	6,850.00	-3,055.39	-729.80	3,048.77	0.00	0.00	0.00	
8,800.00	90.00	179.34	6,850.00	-3,155.38	-728.66	3,148.77	0.00	0.00	0.00	
8,900.00	90.00	179.34	6,850.00	-3,255.38	-727.51	3,248.77	0.00	0.00	0.00	
9,000.00	90.00	179.34	6,850.00	-3,355.37	-726.36	3,348.77	0.00	0.00	0.00	
9,100.00	90.00	179.34	6,850.00	-3,455.36	-725.21	3,448.77	0.00	0.00	0.00	
9,200.00	90.00	179.34	6,850.00	-3,555.36	-724.06	3,548.77	0.00	0.00	0.00	
9,300.00	90.00	179.34	6,850.00	-3,655.35	-722.91	3,648.77	0.00	0.00	0.00	
9,400.00	90.00	179.34	6,850.00	-3,755.34	-721.76	3,748.77	0.00	0.00	0.00	
9,500.00	90.00	179.34	6,850.00	-3,855.34	-720.61	3,848.77	0.00	0.00	0.00	
9,600.00	90.00	179.34	6,850.00	-3,955.33	-719.46	3,948.77	0.00	0.00	0.00	
9,700.00	90.00	179.34	6,850.00	-4,055.32	-718.32	4,048.77	0.00	0.00	0.00	
9,800.00	90.00	179.34	6,850.00	-4,155.32	-717.17	4,148.77	0.00	0.00	0.00	
9,900.00	90.00	179.34	6,850.00	-4,255.31	-716.02	4,248.77	0.00	0.00	0.00	
10,000.00	90.00	179.34	6,850.00	-4,355.30	-714.87	4,348.77	0.00	0.00	0.00	
10,100.00	90.00	179.34	6,850.00	-4,455.30	-713.72	4,448.77	0.00	0.00	0.00	
10,200.00	90.00	179.34	6,850.00	-4,555.29	-712.57	4,548.77	0.00	0.00	0.00	
10,300.00	90.00	179.34	6,850.00	-4,655.29	-711.42	4,648.77	0.00	0.00	0.00	
10,400.00	90.00	179.34	6,850.00	-4,755.28	-710.27	4,748.77	0.00	0.00	0.00	
10,500.00	90.00	179.34	6,850.00	-4,855.27	-709.13	4,848.77	0.00	0.00	0.00	
10,600.00	90.00	179.34	6,850.00	-4,955.27	-707.98	4,948.77	0.00	0.00	0.00	
10,700.00	90.00	179.34	6,850.00	-5,055.26	-706.83	5,048.77	0.00	0.00	0.00	
10,800.00	90.00	179.34	6,850.00	-5,155.25	-705.68	5,148.77	0.00	0.00	0.00	
10,900.00	90.00	179.34	6,850.00	-5,255.25	-704.53	5,248.77	0.00	0.00	0.00	
11,000.00	90.00	179.34	6,850.00	-5,355.24	-703.38	5,348.77	0.00	0.00	0.00	
11,100.00	90.00	179.34	6,850.00	-5,455.23	-702.23	5,448.77	0.00	0.00	0.00	
11,200.00	90.00	179.34	6,850.00	-5,555.23	-701.08	5,548.77	0.00	0.00	0.00	
11,300.00	90.00	179.34	6,850.00	-5,655.22	-699.94	5,648.76	0.00	0.00	0.00	
11,400.00	90.00	179.34	6,850.00	-5,755.21	-698.79	5,748.76	0.00	0.00	0.00	
11,500.00	90.00	179.34	6,850.00	-5,855.21	-697.64	5,848.76	0.00	0.00	0.00	
11,600.00	90.00	179.34	6,850.00	-5,955.20	-696.49	5,948.76	0.00	0.00	0.00	
11,700.00	90.00	179.34	6,850.00	-6,055.19	-695.34	6,048.76	0.00	0.00	0.00	
11,800.00	90.00	179.34	6,850.00	-6,155.19	-694.19	6,148.76	0.00	0.00	0.00	
11,900.00	90.00	179.34	6,850.00	-6,255.18	-693.04	6,248.76	0.00	0.00	0.00	
12,000.00	90.00	179.34	6,850.00	-6,355.17	-691.89	6,348.76	0.00	0.00	0.00	
12,100.00	90.00	179.34	6,850.00	-6,455.17	-690.75	6,448.76	0.00	0.00	0.00	
12,200.00	90.00	179.34	6,850.00	-6,555.16	-689.60	6,548.76	0.00	0.00	0.00	
12,300.00	90.00	179.34	6,850.00	-6,655.15	-688.45	6,648.76	0.00	0.00	0.00	
12,400.00	90.00	179.34	6,850.00	-6,755.15	-687.30	6,748.76	0.00	0.00	0.00	
12,500.00	90.00	179.34	6,850.00	-6,855.14	-686.15	6,848.76	0.00	0.00	0.00	
12,600.00	90.00	179.34	6,850.00	-6,955.13	-685.00	6,948.76	0.00	0.00	0.00	
12,700.00	90.00	179.34	6,850.00	-7,055.13	-683.85	7,048.76	0.00	0.00	0.00	
12,800.00	90.00	179.34	6,850.00	-7,155.12	-682.70	7,148.76	0.00	0.00	0.00	
12,900.00	90.00	179.34	6,850.00	-7,255.11	-681.56	7,248.76	0.00	0.00	0.00	
13,000.00	90.00	179.34	6,850.00	-7,355.11	-680.41	7,348.76	0.00	0.00	0.00	
13,100.00	90.00	179.34	6,850.00	-7,455.10	-679.26	7,448.76	0.00	0.00	0.00	
13,200.00	90.00	179.34	6,850.00	-7,555.09	-678.11	7,548.76	0.00	0.00	0.00	
13,300.00	90.00	179.34	6,850.00	-7,655.09	-676.96	7,648.76	0.00	0.00	0.00	
13,400.00	90.00	179.34	6,850.00	-7,755.08	-675.81	7,748.76	0.00	0.00	0.00	
13,500.00	90.00	179.34	6,850.00	-7,855.07	-674.66	7,848.76	0.00	0.00	0.00	
13,600.00	90.00	179.34	6,850.00	-7,955.07	-673.51	7,948.76	0.00	0.00	0.00	
13,700.00	90.00	179.34	6,850.00	-8,055.06	-672.37	8,048.76	0.00	0.00	0.00	

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Company:	VERDAD RESOURCES	TVD Reference:	RKB = 20' @ 4944.00usft (Drilling Rig)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 20' @ 4944.00usft (Drilling Rig)
Site:	2N-64W-24 ARNOLD PAD	North Reference:	True
Well:	HELEN 2536-05H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
Design:	Design #2		

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)	
13,800.00	90.00	179.34	6,850.00	-8,155.05	-671.22	8,148.76	0.00	0.00	0.00	
13,900.00	90.00	179.34	6,850.00	-8,255.05	-670.07	8,248.76	0.00	0.00	0.00	
14,000.00	90.00	179.34	6,850.00	-8,355.04	-668.92	8,348.76	0.00	0.00	0.00	
14,100.00	90.00	179.34	6,850.00	-8,455.03	-667.77	8,448.76	0.00	0.00	0.00	
14,200.00	90.00	179.34	6,850.00	-8,555.03	-666.62	8,548.76	0.00	0.00	0.00	
14,300.00	90.00	179.34	6,850.00	-8,655.02	-665.47	8,648.75	0.00	0.00	0.00	
14,400.00	90.00	179.34	6,850.00	-8,755.01	-664.32	8,748.75	0.00	0.00	0.00	
14,500.00	90.00	179.34	6,850.00	-8,855.01	-663.18	8,848.75	0.00	0.00	0.00	
14,600.00	90.00	179.34	6,850.00	-8,955.00	-662.03	8,948.75	0.00	0.00	0.00	
14,700.00	90.00	179.34	6,850.00	-9,054.99	-660.88	9,048.75	0.00	0.00	0.00	
14,800.00	90.00	179.34	6,850.00	-9,154.99	-659.73	9,148.75	0.00	0.00	0.00	
14,900.00	90.00	179.34	6,850.00	-9,254.98	-658.58	9,248.75	0.00	0.00	0.00	
15,000.00	90.00	179.34	6,850.00	-9,354.98	-657.43	9,348.75	0.00	0.00	0.00	
15,100.00	90.00	179.34	6,850.00	-9,454.97	-656.28	9,448.75	0.00	0.00	0.00	
15,200.00	90.00	179.34	6,850.00	-9,554.96	-655.13	9,548.75	0.00	0.00	0.00	
15,300.00	90.00	179.34	6,850.00	-9,654.96	-653.99	9,648.75	0.00	0.00	0.00	
15,400.00	90.00	179.34	6,850.00	-9,754.95	-652.84	9,748.75	0.00	0.00	0.00	
15,500.00	90.00	179.34	6,850.00	-9,854.94	-651.69	9,848.75	0.00	0.00	0.00	
15,600.00	90.00	179.34	6,850.00	-9,954.94	-650.54	9,948.75	0.00	0.00	0.00	
15,700.00	90.00	179.34	6,850.00	-10,054.93	-649.39	10,048.75	0.00	0.00	0.00	
15,800.00	90.00	179.34	6,850.00	-10,154.92	-648.24	10,148.75	0.00	0.00	0.00	
15,900.00	90.00	179.34	6,850.00	-10,254.92	-647.09	10,248.75	0.00	0.00	0.00	
16,000.00	90.00	179.34	6,850.00	-10,354.91	-645.94	10,348.75	0.00	0.00	0.00	
16,100.00	90.00	179.34	6,850.00	-10,454.90	-644.80	10,448.75	0.00	0.00	0.00	
16,200.00	90.00	179.34	6,850.00	-10,554.90	-643.65	10,548.75	0.00	0.00	0.00	
16,300.00	90.00	179.34	6,850.00	-10,654.89	-642.50	10,648.75	0.00	0.00	0.00	
16,400.00	90.00	179.34	6,850.00	-10,754.88	-641.35	10,748.75	0.00	0.00	0.00	
16,500.00	90.00	179.34	6,850.00	-10,854.88	-640.20	10,848.75	0.00	0.00	0.00	
16,600.00	90.00	179.34	6,850.00	-10,954.87	-639.05	10,948.75	0.00	0.00	0.00	
16,700.00	90.00	179.34	6,850.00	-11,054.86	-637.90	11,048.75	0.00	0.00	0.00	
16,800.00	90.00	179.34	6,850.00	-11,154.86	-636.75	11,148.75	0.00	0.00	0.00	
16,900.00	90.00	179.34	6,850.00	-11,254.85	-635.61	11,248.75	0.00	0.00	0.00	
16,998.23	90.00	179.34	6,850.00	-11,353.07	-634.48	11,346.98	0.00	0.00	0.00	
BPZ @ 16998.23ft										
17,000.00	90.00	179.34	6,850.00	-11,354.84	-634.46	11,348.75	0.00	0.00	0.00	
17,088.21	90.00	179.34	6,850.00	-11,443.05	-633.44	11,436.96	0.00	0.00	0.00	
TD Well @ 17088.21ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")
1,937.62	1,908.00	9 5/8"		9-5/8	13-1/2

Planning Report

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Company:	VERDAD RESOURCES	TVD Reference:	RKB = 20' @ 4944.00usft (Drilling Rig)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 20' @ 4944.00usft (Drilling Rig)
Site:	2N-64W-24 ARNOLD PAD	North Reference:	True
Well:	HELEN 2536-05H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
Design:	Design #2		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
203.25	203.25	0.00	0.00	Begin Nudge @ 203.25ft
808.75	804.25	-57.30	-27.95	Hold Tangent @ 808.75ft
3,208.75	3,150.84	-509.84	-248.66	Change Tangent Direction @ 3208.75ft
3,284.54	3,224.95	-523.63	-256.51	Hold Tangent @ 3284.54ft
6,463.08	6,332.76	-1,081.42	-621.93	KOP @ 6463.08ft :: DLS = 9°/100'
7,345.87	6,850.00	-1,701.97	-719.65	TPZ @ 7345.87ft
7,545.87	6,850.00	-1,901.48	-733.60	Turn to BHL @ 7545.87ft
7,778.78	6,850.00	-2,134.23	-740.39	End Turn @ 7778.78ft
16,998.23	6,850.00	-11,353.07	-634.48	BPZ @ 16998.23ft
17,088.21	6,850.00	-11,443.05	-633.44	TD Well @ 17088.21ft