



VERTICALITY ANALYSIS

COMPANY SNAKE RIVER OIL AND GAS, LLC
WELL IRVIN #1-19
FIELD WILDCAT
COUNTY PAYETTE
STATE U.S.A. / IDAHO
LOCATION SHL: 904' FSL & 925' FWL

RECEIVED
 By jthum at 11:38 am, Jan 20, 2023

SEC 19 TWP 8N RGE 4W Other Services
Latitude 44.0134238889 **DUAL NEUTRON**
Longitude 116.8699952778 **ARRAY INDUCTION**
API Number 11-075-20039

PHOTO-DENSITY
 COMPENSATED SONIC

Permanent Datum GL, Elevation 2192 feet
Log Measured From KB, 12.50 feet above Permanent Datum
Drilling Measured From KB

Elevations: feet
 KB 2204.50
 DF 2204.50
 GL 2192.00

Date	17-OCT-2022	
Run Number	1	
Service Order	113-85	
Depth Driller	5500.00	feet
Depth Logger	5504.00	feet
First Reading	5440.85	feet
Last Reading	1127.00	feet
Casing Driller	1130.00	feet
Casing Logger	1127.00	feet
Bit Size	8.500	inches
Hole Fluid Type	WBM	
Density / Viscosity	11.10 lb/USg	41.00 sec/qt
PH / Fluid Loss	7.00	3.50 ml/30Min
Sample Source	FLOWLINE	
Rm @ Measured Temp	4.68 @ 75.0	ohm-m
Rmf @ Measured Temp	3.51 @ 75.0	ohm-m
Rmc @ Measured Temp	5.85 @ 75.0	ohm-m
Source Rmf / Rmc	CALC	CALC
Rm @ BHT	1.708 @210.0	ohm-m
Time Since Circulation	7 HRS	
Max Recorded Temp	210.00	deg F
Equipment / Base	113	CASPER
Recorded By	ENDER GARCIA	
Witnessed By	CLINTON HARMAN	CARLOS ARVELO
RIG	PAUL GRAHAM	

In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.

REMARKS

SOFTWARE: LOGGED WITGH WLS 22.11.1632

CALIBRATED MEASURE WHEEL PROCEDURE. FIRST RUN IN HOLE.

QUAD COMBO LOG RECORDED FROM 5504 FT TO SURFACE CASING AND GR TO SURFACE AS REQUESTED BY CUSTOMER

TOOLS RUN: MAI, MFE, MISD, MSS, MTC, SKJ, MISE, SKJ, MPD, MDN, MBN, MVC, MCG, SHA, CBH

HARDWARE: MAI: INLINE CENTRALIZER FITTED AT BOTTOM
MISD CENTRALIZER AT TOP
MSS: MISD CENTRALIZER BELOW AND MTC WITH BASKET ABOVE
MTC: OVERBODY CENTRALIZER ON THE TOOL
MPD: 8" PROFILE PLATE FITTED
MDN: DUAL BOWSPRING ECCENTRALIZER FITTED

MATRIX FOR POROSITY CALCULATION: 2.65 G/CC

ANNULAR VOLUME BASED ON 5.5" PRODUCTION CASING

FOR HVOL AND AVOL PLEASE SEE LOG

CREW: ARVELO, GARCIA, TODD, MUIR

Verticality Analysis Interpretation Notes

18-OCT-2022 07:23

All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 1:50000(metric) and 1:48000(imperial), and the minimum 1:1.

The analysis is derived by integrating 10cm sampled data down the borehole. The listing supplied will contain a maximum of 200 points in multiples of 1, 2, 5, 10, 20, 50 or 100 metres/feet depending on the total range of the analysis. However, the analysis is calculated for the entire range of the borehole and the final borehole position is included in the listing.

Computed verticality may only be fully derived in open sections of the borehole, away from the influence of any unusual magnetic effects, (as the azimuth calculations are derived from three solid state magnetometers). So the analysis will generally begin at the end of the casing and all borehole positional information will relate to this depth.

Up to ten cross sections may be requested for any borehole to be displayed at any scale, (the default scale is that of the cross-section for the entire hole).

Borehole positional error is derived assuming the following parameters.

	TILT (degrees)	AZIMUTH (degrees)
Typical Error	+/- 0.1000	+/- 5.0000
Maximum Error	+/- 0.2000	+/- 8.0000

Error analysis may be calculated and plotted from the data listing as follows:

- Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot. Origin at the start of the analysis.
- Describe arcs of +/- 10.00 degrees and +/- 15.00 degrees (centre at the origin) through the inner and outer points respectively.
- Connect the respective arcs together with straight lines to give the typical and maximum borehole positional error.

Given below is a full description of the parameters displayed on the ensuing listing:

LOG DEPTH	The depth recorded on the field logs for the borehole.
TRUE DEPTH	The true vertical depth corresponding to the above depth. Corrected from the start of the analysis.
HOLE TILT AND AZIMUTH	The sampled borehole orientation. Tilt measured from Vertical.
AXIAL COORDINATES	The coordinates North and East from the target origin.
POLAR COORDINATES	The polar or radial coordinates of the borehole.
ERROR COORDINATES	The polar coordinates corresponding to the typical and maximum tilt error.

N.B. The reference point for all bearing angles on this listing is given at the top of each sheet.

4350.00	4348.78	0.4	36.2	82.55	43.56	28	93.34	28	104.59	28	82.08	28	98.96	28	87.71
4375.00	4373.78	0.5	40.8	82.70	43.70	28	93.53	28	104.87	28	82.19	28	99.20	28	87.86
4400.00	4398.78	0.5	53.1	82.82	43.86	28	93.72	28	105.14	28	82.29	28	99.43	28	88.00
4425.00	4423.78	0.5	40.6	82.99	44.00	28	93.93	28	105.44	28	82.41	28	99.69	28	88.17
4450.00	4448.78	0.5	58.5	83.11	44.19	28	94.13	28	105.73	28	82.52	28	99.93	28	88.32
4475.00	4473.78	0.6	57.3	83.25	44.42	28	94.36	28	106.05	28	82.67	28	100.20	28	88.51
4500.00	4498.78	0.5	66.6	83.34	44.62	28	94.53	28	106.31	28	82.75	28	100.42	28	88.64
4525.00	4523.78	0.5	66.3	83.42	44.82	28	94.70	28	106.56	28	82.84	28	100.63	28	88.77
4550.00	4548.78	0.3	100.7	83.40	44.93	28	94.74	28	106.69	28	82.79	28	100.71	28	88.76
4575.00	4573.77	0.5	79.7	83.43	45.10	28	94.84	28	106.88	28	82.80	28	100.86	28	88.82
4600.00	4598.77	0.7	51.7	83.60	45.31	28	95.09	29	107.21	28	82.96	28	101.15	28	89.03
4625.00	4623.77	0.8	68.8	83.72	45.61	29	95.33	29	107.55	28	83.12	29	101.44	29	89.23
4650.00	4648.77	0.9	90.8	83.71	45.97	29	95.50	29	107.80	29	83.20	29	101.65	29	89.35
4675.00	4673.77	1.0	49.4	83.97	46.28	29	95.88	29	108.27	29	83.49	29	102.07	29	89.69
4700.00	4698.76	1.0	44.5	84.28	46.58	29	96.30	29	108.77	29	83.82	29	102.54	29	90.06
4725.00	4723.76	1.0	56.3	84.51	46.93	29	96.67	29	109.23	29	84.11	29	102.95	29	90.39
4750.00	4748.75	0.8	67.5	84.66	47.27	29	96.96	29	109.61	29	84.31	29	103.29	29	90.64
4775.00	4773.75	0.8	66.7	84.79	47.59	29	97.24	29	109.97	29	84.50	29	103.60	29	90.87
4800.00	4798.75	0.8	70.4	84.91	47.91	29	97.49	30	110.32	29	84.67	29	103.91	29	91.08
4825.00	4823.75	0.8	60.6	85.07	48.21	30	97.78	30	110.69	29	84.87	30	104.23	29	91.32
4850.00	4848.74	1.1	350.1	85.27	48.17	29	97.93	30	110.93	29	84.93	30	104.43	29	91.43
4875.00	4873.74	1.1	35.7	85.67	48.46	29	98.42	30	111.51	29	85.34	30	104.96	29	91.88
4900.00	4898.73	1.3	37.1	86.12	48.80	30	98.98	30	112.15	29	85.81	30	105.57	29	92.39
4925.00	4923.73	1.3	34.3	86.59	49.13	30	99.56	30	112.82	29	86.30	30	106.19	30	92.93
4950.00	4948.72	1.2	33.4	87.02	49.41	30	100.07	30	113.42	29	86.72	30	106.75	30	93.40
4975.00	4973.72	1.1	37.8	87.39	49.70	30	100.54	30	113.97	30	87.10	30	107.25	30	93.82
5000.00	4998.71	1.0	38.1	87.74	49.97	30	100.97	30	114.50	30	87.45	30	107.74	30	94.21
5025.00	5023.71	1.0	38.4	88.09	50.25	30	101.42	30	115.03	30	87.81	30	108.22	30	94.61
5050.00	5048.70	1.0	40.7	88.43	50.53	30	101.85	30	115.54	30	88.15	30	108.70	30	95.00
5075.00	5073.70	1.0	41.9	88.77	50.84	30	102.29	30	116.08	30	88.51	30	109.18	30	95.40
5100.00	5098.70	1.1	42.2	89.11	51.15	30	102.74	30	116.61	30	88.87	30	109.68	30	95.81
5125.00	5123.69	1.0	38.2	89.44	51.41	30	103.16	30	117.12	30	89.21	30	110.14	30	96.18
5150.00	5148.69	0.8	30.9	89.73	51.58	30	103.50	30	117.54	30	89.45	30	110.52	30	96.47
5175.00	5173.69	0.7	31.8	89.98	51.74	30	103.80	30	117.93	30	89.67	30	110.86	30	96.73
5200.00	5198.69	0.7	34.3	90.22	51.90	30	104.09	30	118.31	30	89.87	30	111.20	30	96.98
5225.00	5223.68	0.7	40.3	90.45	52.10	30	104.38	30	118.69	30	90.07	30	111.53	30	97.22
5250.00	5248.68	0.7	35.0	90.69	52.26	30	104.67	30	119.06	30	90.27	30	111.86	30	97.47
5275.00	5273.68	0.8	25.2	90.98	52.40	30	104.99	30	119.47	30	90.51	30	112.23	30	97.75
5300.00	5298.68	0.8	21.1	91.29	52.52	30	105.32	30	119.89	30	90.75	30	112.60	30	98.04
5325.00	5323.67	0.9	24.9	91.65	52.69	30	105.72	30	120.37	30	91.06	30	113.05	30	98.39
5350.00	5348.67	1.0	13.2	92.09	52.79	30	106.14	30	120.89	30	91.40	30	113.52	30	98.77
5375.00	5373.67	1.0	12.1	92.52	52.89	30	106.57	30	121.40	30	91.74	30	113.99	30	99.16
5400.00	5398.66	1.1	0.9	93.02	52.89	30	107.01	30	121.92	30	92.09	30	114.46	30	99.55
5425.00	5423.66	1.2	4.1	93.55	52.93	30	107.48	30	122.49	29	92.48	30	114.99	29	99.98
5450.00	5448.65	1.4	359.6	94.16	52.93	29	108.02	29	123.11	29	92.92	29	115.56	29	100.47

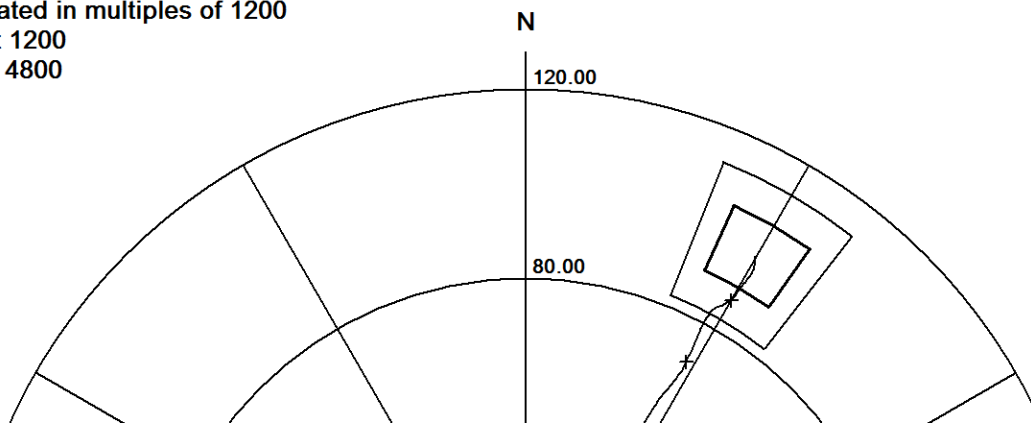
Cross Section

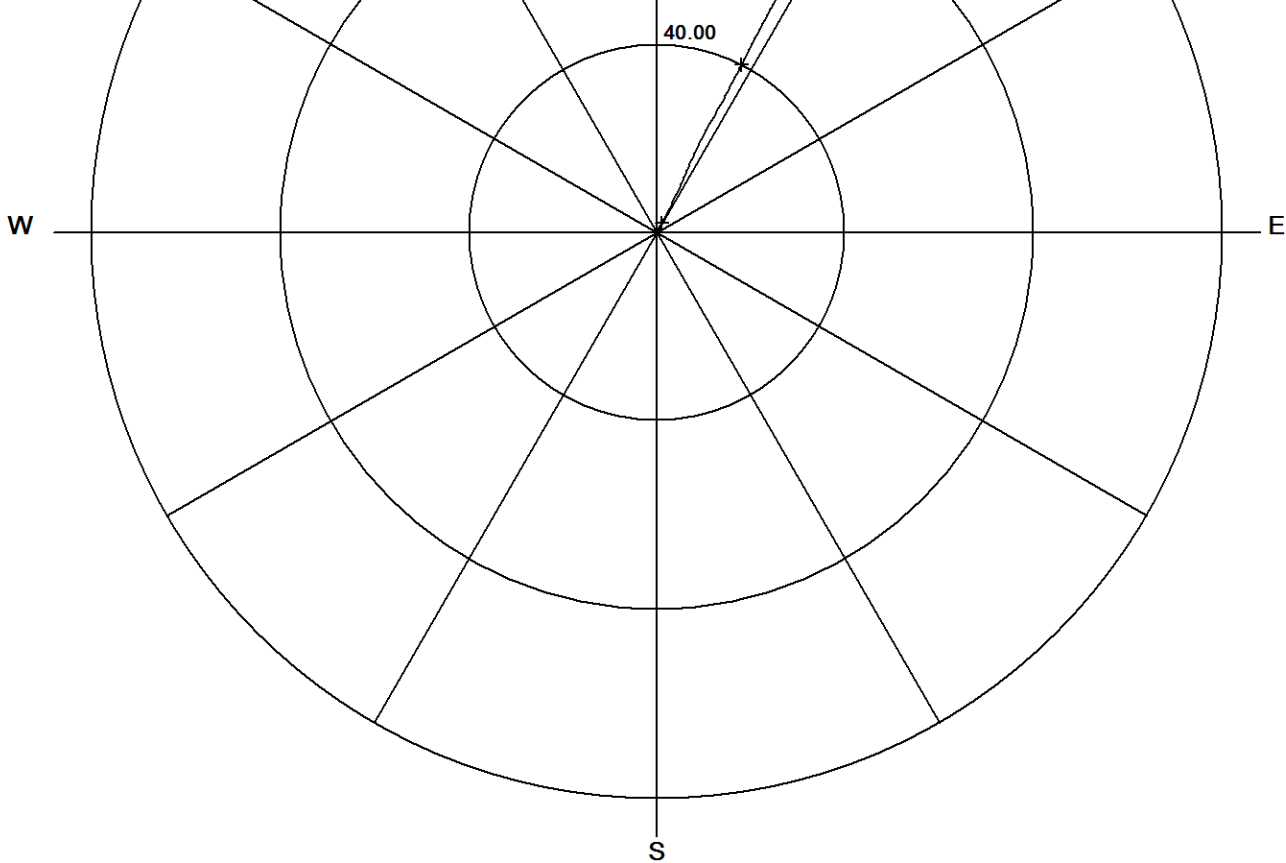
All Figures are Log Depths in feet

Plot With Respect to True North

Target Origin Depth 1125.00
 Last Plotted Depth 5451.27
 Depth Markers annotated in multiples of 1200
 First Depth Marker at 1200
 Last Depth Marker at 4800

Scale 1:480
 Declination 13.3 deg East
 Origin From Hole Top
 9.57 feet North
 4.28 feet East





Borehole Positional Error

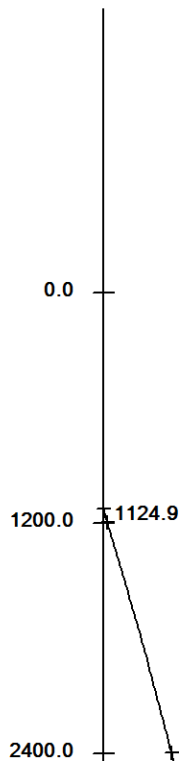
The two boxes surrounding the last plotted depth show the typical and maximum positional error at that depth.

Final Borehole Position

The last plotted depth is at
 84.59 feet North
 48.65 feet East
 ie 97.58 feet from the origin
 30 deg from True North

Vertical Sections

North-South Section

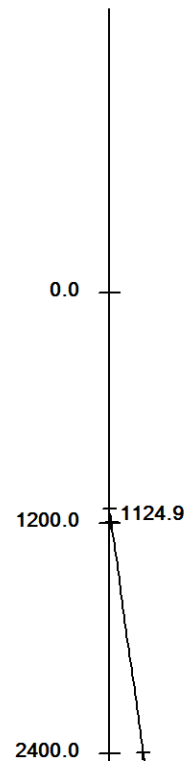


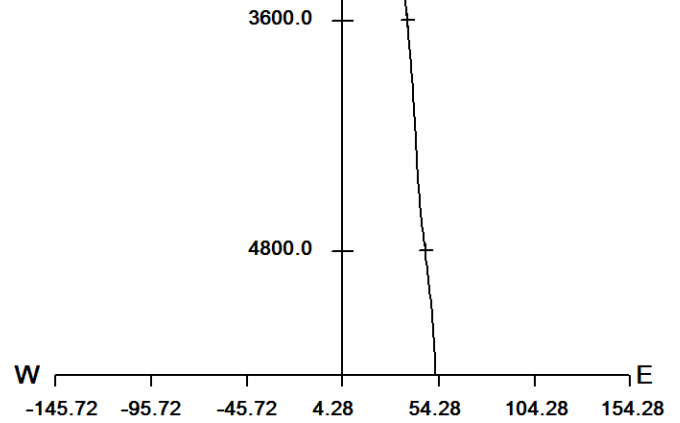
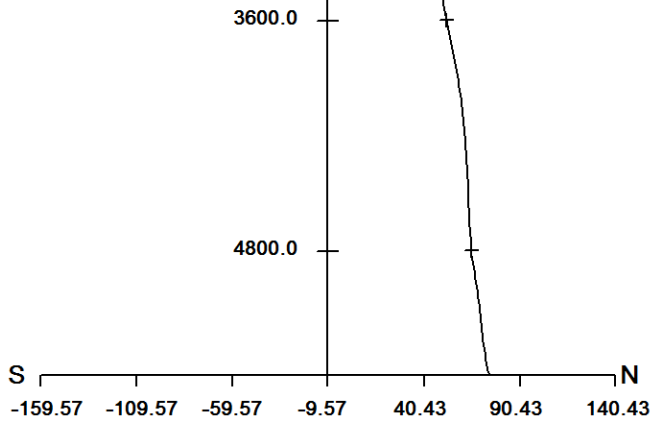
(True Depth vs Displacement)

Vertical Scale 1:12000
 Horizontal Scale 1:1200

Markers annotated as above

East-West Section

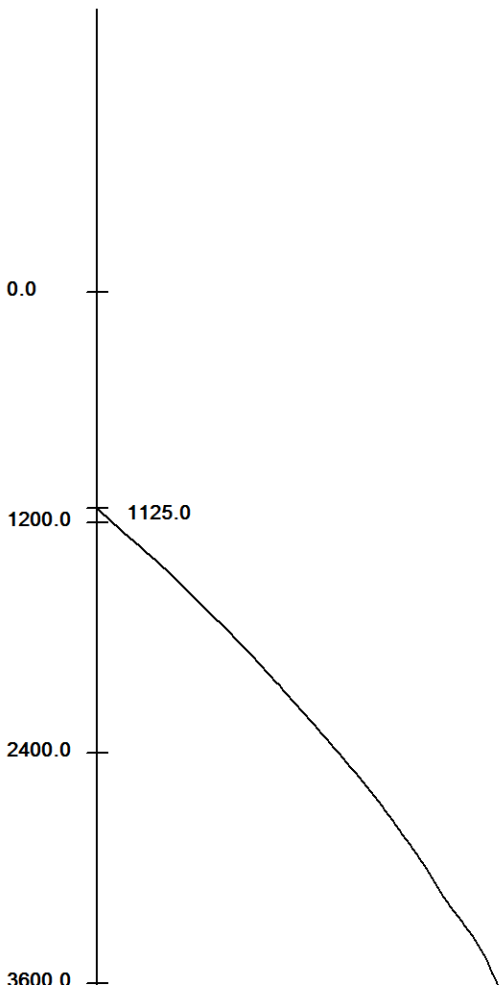




Depth Correction Analysis

Vertical Scale 1:12000
Horizontal Scale 1:6

Log
Depth



Depths Log	True	Depths Log	True	Depths Log	True
1125.00	1124.93	2800.00	2799.14	4475.00	4473.78
1150.00	1149.92	2825.00	2824.13	4500.00	4498.78
1175.00	1174.90	2850.00	2849.12	4525.00	4523.78
1200.00	1199.89	2875.00	2874.11	4550.00	4548.78
1225.00	1224.87	2900.00	2899.11	4575.00	4573.77
1250.00	1249.86	2925.00	2924.10	4600.00	4598.77
1275.00	1274.85	2950.00	2949.09	4625.00	4623.77
1300.00	1299.83	2975.00	2974.08	4650.00	4648.77
1325.00	1324.82	3000.00	2999.07	4675.00	4673.77
1350.00	1349.80	3025.00	3024.06	4700.00	4698.76
1375.00	1374.79	3050.00	3049.06	4725.00	4723.76
1400.00	1399.77	3075.00	3074.05	4750.00	4748.75
1425.00	1424.76	3100.00	3099.04	4775.00	4773.75
1450.00	1449.75	3125.00	3124.03	4800.00	4798.75
1475.00	1474.73	3150.00	3149.03	4825.00	4823.75
1500.00	1499.72	3175.00	3174.02	4850.00	4848.74
1525.00	1524.71	3200.00	3199.01	4875.00	4873.74
1550.00	1549.70	3225.00	3224.00	4900.00	4898.73
1575.00	1574.68	3250.00	3248.99	4925.00	4923.73
1600.00	1599.67	3275.00	3273.98	4950.00	4948.72
1625.00	1624.66	3300.00	3298.97	4975.00	4973.72
1650.00	1649.65	3325.00	3323.96	5000.00	4998.71
1675.00	1674.63	3350.00	3348.95	5025.00	5023.71
1700.00	1699.62	3375.00	3373.94	5050.00	5048.70
1725.00	1724.61	3400.00	3398.94	5075.00	5073.70
1750.00	1749.59	3425.00	3423.93	5100.00	5098.70
1775.00	1774.58	3450.00	3448.92	5125.00	5123.69
1800.00	1799.57	3475.00	3473.91	5150.00	5148.69
1825.00	1824.56	3500.00	3498.91	5175.00	5173.69
1850.00	1849.55	3525.00	3523.90	5200.00	5198.69
1875.00	1874.53	3550.00	3548.90	5225.00	5223.68
1900.00	1899.52	3575.00	3573.89	5250.00	5248.68
1925.00	1924.51	3600.00	3598.89	5275.00	5273.68
1950.00	1949.50	3625.00	3623.88	5300.00	5298.68
1975.00	1974.49	3650.00	3648.88	5325.00	5323.67
2000.00	1999.48	3675.00	3673.87	5350.00	5348.67
2025.00	2024.47	3700.00	3698.86	5375.00	5373.67
2050.00	2049.45	3725.00	3723.86	5400.00	5398.66
2075.00	2074.44	3750.00	3748.85	5425.00	5423.66
2100.00	2099.43	3775.00	3773.85	5450.00	5448.65
2125.00	2124.42	3800.00	3798.84		
2150.00	2149.41	3825.00	3823.83		
2175.00	2174.40	3850.00	3848.83		
2200.00	2199.39	3875.00	3873.82		
2225.00	2224.38	3900.00	3898.82		

4800.0

-0.07 -0.32 -0.57 -0.82 -1.07 -1.32 -1.57

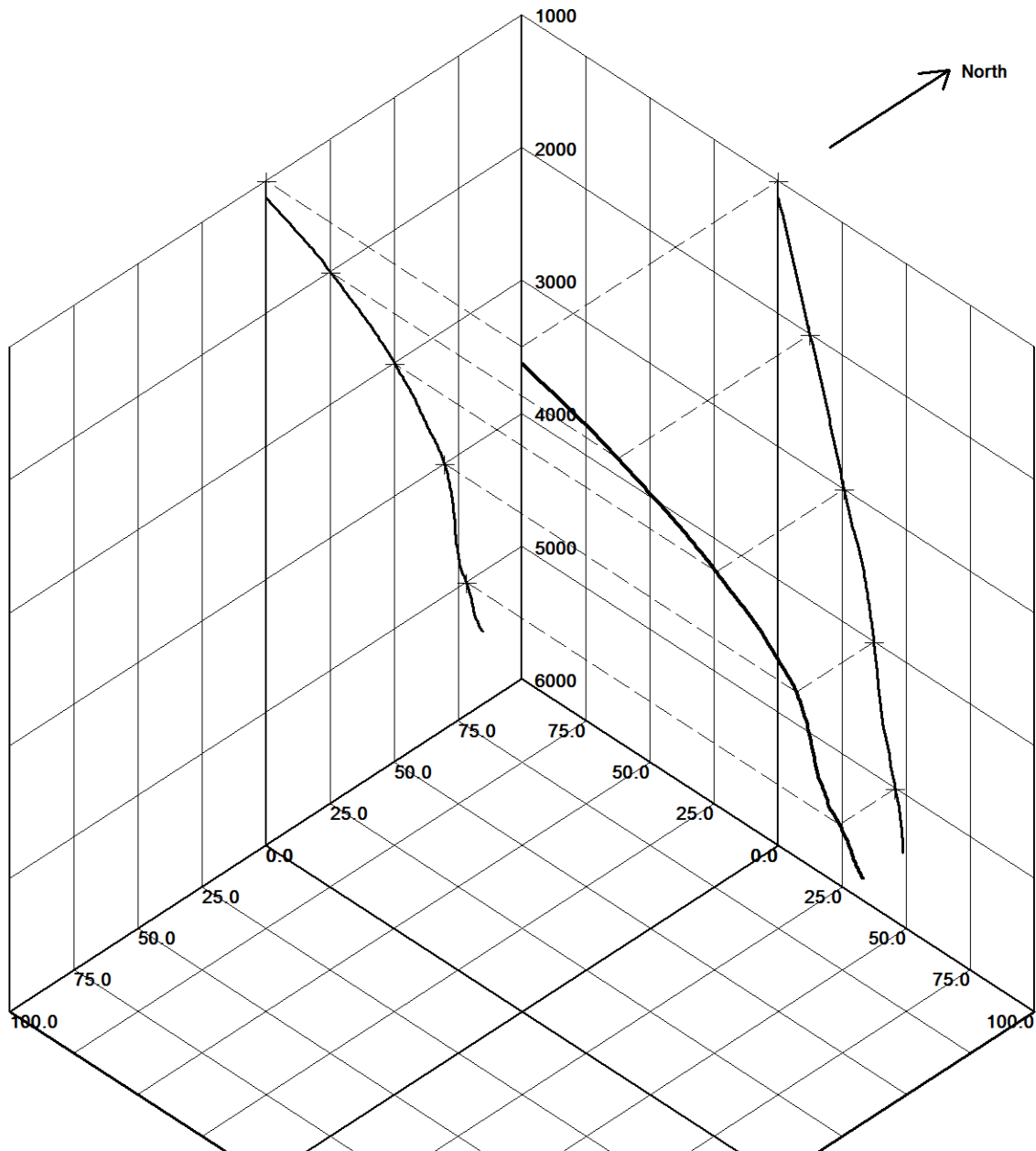
Correction For True Depth

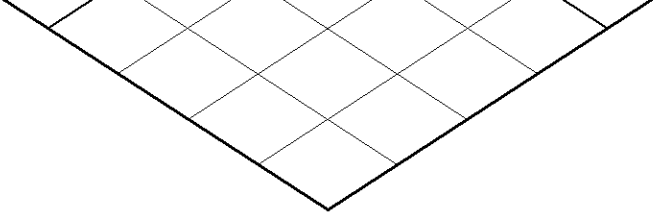
2250.00	2249.36	3925.00	3923.82
2275.00	2274.35	3950.00	3948.81
2300.00	2299.34	3975.00	3973.81
2325.00	2324.33	4000.00	3998.81
2350.00	2349.32	4025.00	4023.80
2375.00	2374.31	4050.00	4048.80
2400.00	2399.30	4075.00	4073.80
2425.00	2424.29	4100.00	4098.80
2450.00	2449.28	4125.00	4123.79
2475.00	2474.27	4150.00	4148.79
2500.00	2499.26	4175.00	4173.79
2525.00	2524.25	4200.00	4198.79
2550.00	2549.24	4225.00	4223.79
2575.00	2574.23	4250.00	4248.79
2600.00	2599.22	4275.00	4273.79
2625.00	2624.21	4300.00	4298.78
2650.00	2649.20	4325.00	4323.78
2675.00	2674.19	4350.00	4348.78
2700.00	2699.18	4375.00	4373.78
2725.00	2724.17	4400.00	4398.78
2750.00	2749.16	4425.00	4423.78
2775.00	2774.15	4450.00	4448.78

3D Borehole Deviation

All figures are True Depths / displacements in feet
Origin Depth 1125.00
Last Plotted Depth 5451.27

Plot With Respect to True North
Declination 13.3 deg East
Origin From Hole Top
9.57 feet North
4.28 feet East





Final Borehole Position

The last plotted depth is at
 84.59 feet North
 48.65 feet East
 ie 97.58 feet from the origin
 30 deg from True North

COMPANY	SNAKE RIVER OIL AND GAS, LLC				
WELL	IRVIN #1-19				
FIELD	WILDCAT				
PROVINCE/COUNTY	PAYETTE				
COUNTRY/STATE	U.S.A. / IDAHO				
Elevation Kelly Bushing	2204.50	feet	Last Reading	1127.00	feet
Elevation Drill Floor	2204.50	feet	First Reading	5440.85	feet
Elevation Ground Level	2192.00	feet	Depth Driller	5500.00	feet
			Depth Logger	5504.00	feet



VERTICALITY ANALYSIS