



VON ENERGY

SURVEY REPORT

CUNNING WOLF UL #1903H

PRECISION RIG 104

4/1/2017



The **Ultimate Partner** In Wellbore Placement

CUSTOMER VON Energy
PROJECT Pecos County, Texas
FIELD Wolfbone (Trend Area)

SDI JOB NO. OP.000000
SDI DISTRICT Midland
SDI KIT/UNIT

SITE INFORMATION

Site Name Pecos County, Texas
Lat/Long 30.8204028° N, 102.7018222° W
Northing 10,270,023.92 ft
Easting 1,553,209.07 ft

Section
Township
Range

MAP INFORMATION

North Reference Grid North
Grid Correction 1.22 deg
System US State Plane 1927
Datum North American Datum 1927 (Clarke 1866)
Map Zone Texas Central: 4203



WELL INFORMATION

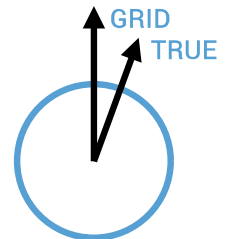
Lat/Long 30.8204028° N, 102.7018222° W
Northing 10,270,023.92 ft
Easting 1,553,209.07 ft
UWI 42-317-39502

DEPTH AND ELEVATION REFERENCE

Ground Level 2956 ft above Mean Sea Level
Reference Datum RKB
Reference Height 28 ft above G.L.
Reference Elevation 2984 ft

VERTICAL SECTION REFERENCE

+N/-S 0 ft
+E/-W 0 ft
Proposal Direction 354.13°
Calculation Method Minimum Curvature



LOCAL GRAVITY REFERENCE INFORMATION

Local Gravity 998.428 mG [computed]
True to Grid add 1.22°

WELL NOTES

Drop Gyro survey

OPERATORS

Jeffrey Loyd

SDI Operator Name (Printed)

SIGNATURE

DATE

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00	0.00
108.00	0.35	33.88	108.00	0.25	0.27	0.18	0.32	0.33	33.88
205.00	0.36	33.24	205.00	0.72	0.78	0.52	0.01	0.93	33.68
299.00	0.50	45.90	298.99	1.20	1.31	0.97	0.18	1.63	36.66
482.00	0.82	51.24	481.98	2.41	2.68	2.57	0.18	3.72	43.74
578.00	0.92	59.03	577.97	3.11	3.51	3.77	0.16	5.15	47.00
763.00	0.90	0.22	762.95	5.19	5.74	5.05	0.48	7.65	41.36
855.00	1.00	348.30	854.94	6.71	7.25	4.89	0.24	8.74	34.02
947.00	1.70	342.77	946.91	8.84	9.33	4.33	0.77	10.29	24.88
1072.00	1.98	338.62	1071.85	12.73	13.10	2.99	0.25	13.44	12.87
1162.00	2.07	340.59	1161.79	15.81	16.08	1.89	0.13	16.19	6.69
1226.00	2.31	336.82	1225.75	18.16	18.36	1.00	0.43	18.38	3.11
1320.00	2.20	336.11	1319.67	21.68	21.74	-0.48	0.12	21.75	358.74
1415.00	1.67	333.23	1414.62	24.70	24.64	-1.84	0.57	24.71	355.74
1491.00	1.25	333.18	1490.59	26.51	26.37	-2.71	0.55	26.51	354.13



Scientific Drilling

Scientific Drilling International, Inc.

325 S. Faudree Rd. • Odessa, Texas 79761

P. O. Box 9699 • Midland, Texas 79708

Tel: 432-689-5600 • Fax: 432-697-0324

State of Texas
County of Midland

I, Jeffrey Loyd, certify that; I am employed by Scientific Drilling International; that I did on the day(s) of 03/31/2017 through 04/02/2017 conduct or supervise the taking of a Keeper Gyro survey from a depth of 108 feet to a depth of 1491 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Scientific Drilling International; that I am authorized and qualified to make this report; that this survey was conducted at the request of Periscope Operating for the Cunning Wolf UL #1903H Well, API# 42-371-39502 in Pecos County, Texas; and that I have reviewed this report and find that it conforms to the principals and procedures as set forth by Scientific Drilling International.


Field Technician



12074 FM 3083 Rd., Conroe, TX 77304 | P: 936-756-2400 | F: 936-756-2401

May 17, 2017

The Railroad Commission of Texas
Oil & Gas Division
P.O. Drawer 12967
Capital Station
Austin, TX 78711-2967

Attention: Pam Johns

RE: Periscope Operating
Well: Cuning Wolf Lease #1903H
Field: Wolfbone
Pecos County, TX
API Number: 42-371-39502

Dear Ms. Johns,

Please find the attached surveys performed on the above referenced well by VON Directional Services, LLC. Other information required by your office is as follows:

Name of surveyor: Chuck Ortego

Original Hole:

Surveyed Depths: 1549' – 17572' MD

Date Performed: 4/2/17 – 4/30/17

Type of Survey: Directional Survey – MWD

A certified plat on which the bottom hole location is oriented both to the surface location and the lease lines (or unit lines in case of pooling) is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

Sincerely,

Chuck Ortego
MWD Manager

SURVEY DATA CERTIFICATION



Job #: 170058
Client: Periscope Operating
County & State: Pecos County, TX.
Well: Cunning Wolf Lease #1903H
API No: 42-371-39502
Proposed Direction: 34.75°

TIE-IN DATA

MD	TVD	INC	AZM	N/-S	E/-W	DATA SOURCE
1491'	1490.6'	1.25°	333.18°	26.4'	-2.7'	Gyro
Data Source Company:						Gyro Data

SURVEY DATA

First Survey Date	First Survey Depth	INC	AZM
2-Apr-17	1549 ft	1.06°	353.02°

Last Survey Date	Last Survey Depth	INC	AZM
30-Apr-17	17505 ft	94.97°	34.86°

Survey Instrument Type

MWD-TOOL

Projected TD Survey Date	Projected TD Survey Depth	INC	AZM
30-Apr-17	17572 ft	94.97°	34.86°

CORRECTION INFORMATION

Magnetic Declination Used	6.48	degrees
Grid Convergence Used	1.22	degrees

Corrected to True/Grid North

Grid North

Total Correction	7.7	degrees
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TO THE BEST OF MY KNOWLEDGE, I CERTIFY THIS SURVEY DATA TO BE TRUE AND CORRECT.

C. Ortega

Signature

C uc Ortega

Printed Name

May 17, 2017

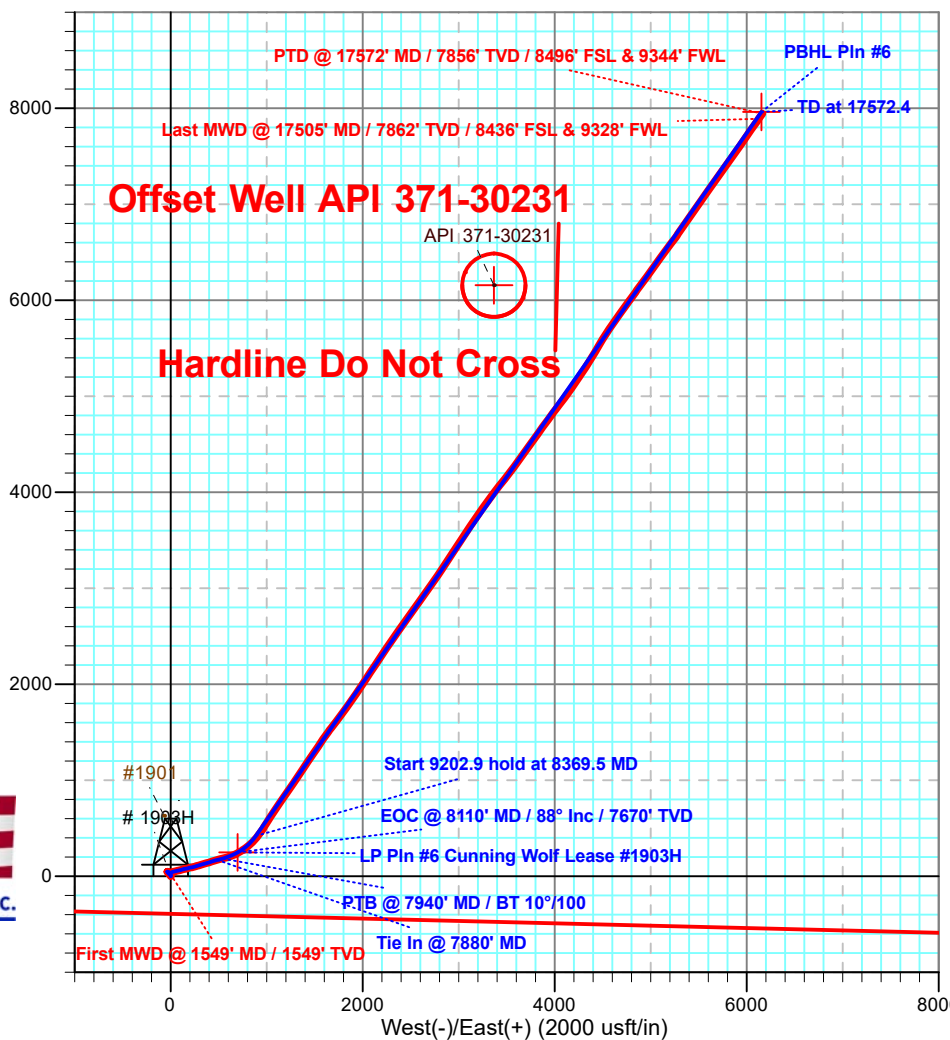
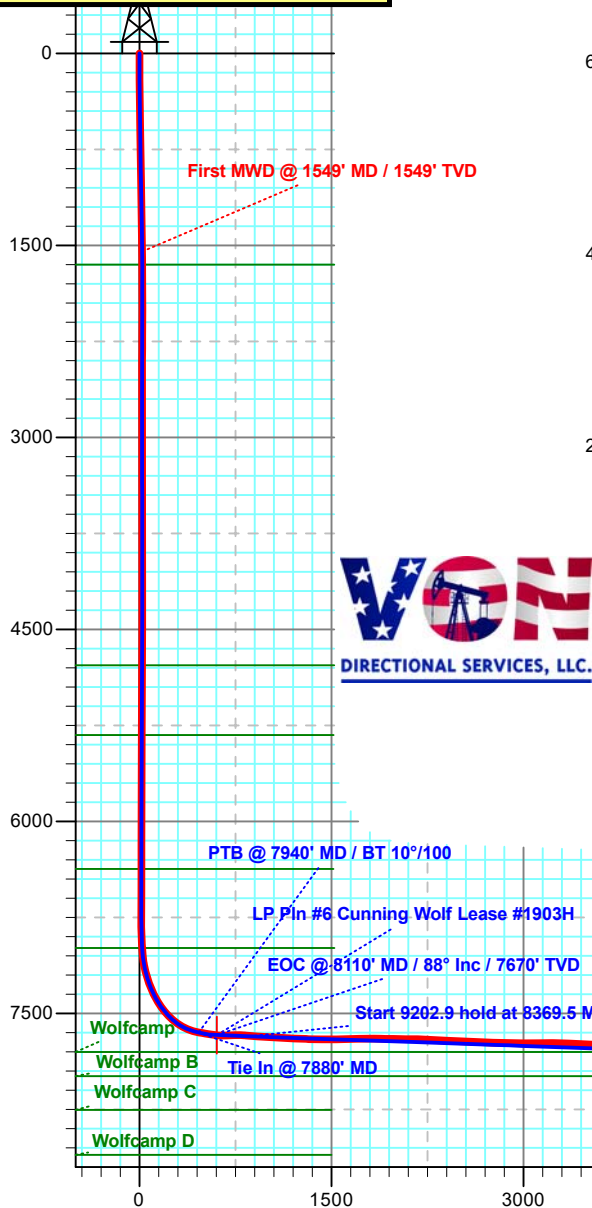
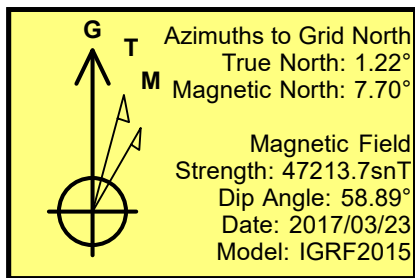
Date

Periscope Operating Pecos, TX Cunning Wolf Lease # 1903H Precision 104 Plan #6

ANNOTATIONS							
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure
7880.0	78.00	74.76	7636.7	170.6	486.9	417.7	0.0
7940.0	78.00	74.76	7649.2	186.0	543.5	462.6	58.7
8109.9	88.00	60.90	7670.0	249.6	699.0	603.6	227.1
8369.5	88.00	34.93	7679.2	422.0	889.9	854.0	486.5
17572.4	88.00	34.93	8000.0	7962.9	6155.4	10051.3	9683.8
							Annotation
							Tie In @ 7880' MD
							PTB @ 7940' MD / BT 10°/100
							EOC @ 8110' MD / 88° Inc / 7670' TVD
							Start 9202.9 hold at 8369.5 MD
							TD at 17572.4

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
LP Pln #6 Cunning Wolf Lease #1903H	7670.0	249.6	699.0	10270273.51	1553908.11	30° 49' 16.067 N	102° 41' 58.610 W	Point
PBHL Pln #6	8000.0	7962.9	6155.4	10277986.80	1559364.48	30° 50' 33.544 N	102° 40' 57.911 W	Point
API 371-30231	9000.0	6156.5	3368.0	10276180.43	1556577.10	30° 50' 15.084 N	102° 41' 29.441 W	Circle (Radius: 330.0)
- plan hits target center								
- plan misses target center by 1670.4usft at 14532.3usft MD (7894.0 TVD, 5471.8 N, 4416.0 E)								



Job Number:
Company:
Lease/Well:
Location:
Rig Name:
RKB:
G.L. or M.S.L.:

State/Country:
Declination:
Grid:
File name: C:\USERS\C961QM1\DESKTOP\PERISC~1\WELLPL~1\
Date/Time: 30-Apr-17 / 05:33
Curve Name:

Von Directional

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane 34.75
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
1491.00	1.25	333.18	1490.59	26.37	-2.71	20.12	26.51	354.13	.00
1549.00	1.06	353.02	1548.58	27.47	-3.06	20.82	27.64	353.64	.76
1644.00	.53	337.55	1643.57	28.75	-3.34	21.72	28.94	353.38	.60
1739.00	.44	271.90	1738.57	29.16	-3.87	21.76	29.42	352.45	.56
1833.00	.35	295.89	1832.56	29.30	-4.49	21.52	29.64	351.29	.20
1928.00	.44	282.18	1927.56	29.50	-5.10	21.33	29.94	350.19	.14
2023.00	.44	289.65	2022.56	29.70	-5.80	21.10	30.27	348.94	.06
2117.00	.44	284.12	2116.56	29.91	-6.49	20.88	30.61	347.75	.05
2212.00	.53	298.09	2211.55	30.21	-7.24	20.70	31.06	346.53	.16
2307.00	.53	292.03	2306.55	30.58	-8.03	20.55	31.62	345.29	.06
2401.00	.53	295.37	2400.54	30.93	-8.83	20.38	32.17	344.07	.03
2495.00	.53	300.46	2494.54	31.34	-9.59	20.28	32.77	342.98	.05
2590.00	.70	305.39	2589.54	31.90	-10.45	20.25	33.56	341.87	.19
2685.00	.79	297.65	2684.53	32.54	-11.50	20.18	34.51	340.54	.14
2781.00	.88	305.74	2780.52	33.27	-12.68	20.11	35.61	339.13	.15
2875.00	1.06	305.83	2874.50	34.20	-13.97	20.14	36.95	337.78	.19
2970.00	.97	307.76	2969.49	35.21	-15.32	20.20	38.40	336.48	.10
3067.00	1.14	304.15	3066.47	36.26	-16.77	20.23	39.95	335.18	.19
3161.00	1.14	306.26	3160.45	37.33	-18.30	20.25	41.58	333.89	.04
3256.00	1.49	309.87	3255.43	38.68	-20.01	20.38	43.55	332.65	.38
3350.00	1.23	303.45	3349.40	40.02	-21.79	20.47	45.57	331.44	.32
3445.00	1.49	308.90	3444.38	41.36	-23.60	20.53	47.62	330.29	.31
3539.00	1.41	303.45	3538.35	42.77	-25.52	20.59	49.80	329.18	.17
3634.00	1.41	303.63	3633.32	44.06	-27.46	20.55	51.92	328.06	.00
3728.00	1.32	306.00	3727.29	45.33	-29.30	20.55	53.98	327.12	.11

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
3823.00	1.41	303.45	3822.26	46.62	-31.16	20.54	56.08	326.24	.11
3918.00	.79	308.81	3917.24	47.68	-32.65	20.56	57.78	325.60	.66
4013.00	.79	122.49	4012.24	47.74	-32.61	20.64	57.81	325.66	1.66
4107.00	1.32	104.64	4106.23	47.11	-31.01	21.03	56.41	326.64	.66
4203.00	1.23	119.41	4202.20	46.33	-29.05	21.51	54.68	327.91	.35
4298.00	1.23	132.68	4297.18	45.14	-27.41	21.46	52.81	328.73	.30
4393.00	1.32	121.08	4392.16	43.88	-25.72	21.39	50.86	329.62	.29
4488.00	1.23	121.69	4487.13	42.78	-23.92	21.52	49.01	330.79	.10
4582.00	1.14	128.81	4581.11	41.66	-22.33	21.51	47.27	331.81	.18
4678.00	1.06	122.66	4677.10	40.59	-20.84	21.47	45.62	332.82	.15
4773.00	1.23	138.75	4772.08	39.35	-19.43	21.26	43.88	333.72	.38
4867.00	1.23	186.65	4866.06	37.58	-18.88	20.12	42.06	333.33	1.06
4962.00	1.06	140.85	4961.04	35.89	-18.44	18.98	40.35	332.81	.95
5057.00	.62	144.46	5056.03	34.79	-17.59	18.56	38.98	333.18	.47
5151.00	.62	160.19	5150.02	33.90	-17.12	18.10	37.98	333.21	.18
5245.00	.62	151.49	5244.02	32.97	-16.70	17.57	36.96	333.13	.10
5340.00	.44	137.43	5339.02	32.25	-16.21	17.26	36.10	333.31	.23
5435.00	.35	108.16	5434.01	31.89	-15.69	17.26	35.54	333.81	.23
5529.00	.26	127.32	5528.01	31.67	-15.25	17.34	35.15	334.30	.14
5624.00	.09	189.72	5623.01	31.47	-15.09	17.26	34.90	334.39	.24
5719.00	.26	280.16	5718.01	31.44	-15.31	17.10	34.97	334.03	.29
5814.00	.70	302.57	5813.01	31.79	-16.01	16.99	35.59	333.26	.49
5909.00	.79	274.62	5908.00	32.15	-17.16	16.64	36.44	331.92	.39
6003.00	.79	279.72	6001.99	32.31	-18.44	16.04	37.20	330.29	.07
6098.00	.62	185.77	6096.99	31.91	-19.14	15.31	37.21	329.05	1.09
6193.00	.35	140.50	6191.98	31.18	-19.00	14.78	36.51	328.63	.47
6286.00	.44	114.31	6284.98	30.81	-18.50	14.77	35.94	329.02	.21
6380.00	.26	130.40	6378.98	30.52	-18.01	14.82	35.44	329.46	.22
6476.00	.53	213.63	6474.98	30.01	-18.09	14.35	35.04	328.92	.59
6570.00	.62	269.88	6568.97	29.65	-18.84	13.62	35.13	327.57	.58
6623.00	.53	287.72	6621.97	29.72	-19.36	13.39	35.47	326.93	.38
6756.00	1.06	63.25	6754.96	30.46	-18.84	14.29	35.82	328.26	1.12
6848.00	1.41	65.62	6846.94	31.31	-17.05	16.01	35.66	331.43	.38
6939.00	1.41	55.42	6937.91	32.41	-15.11	18.02	35.76	335.00	.28
7031.00	5.36	71.77	7029.74	34.40	-10.10	22.51	35.85	343.64	4.38
7062.00	8.53	70.81	7060.51	35.61	-6.55	25.52	36.21	349.58	10.23
7092.00	11.34	70.37	7090.05	37.33	-1.67	29.72	37.37	357.44	9.37
7123.00	13.54	70.01	7120.32	39.60	4.61	35.16	39.86	6.65	7.10
7155.00	16.36	71.77	7151.24	42.29	12.42	41.82	44.07	16.36	8.93
7186.00	19.52	71.95	7180.73	45.26	21.49	49.43	50.10	25.40	10.20
7218.00	21.46	74.58	7210.70	48.47	32.22	58.19	58.20	33.61	6.71
7249.00	23.30	77.31	7239.37	51.33	43.67	67.06	67.39	40.39	6.82
7281.00	24.71	77.75	7268.60	54.14	56.38	76.61	78.16	46.16	4.44
7312.00	27.17	76.87	7296.47	57.12	69.60	86.61	90.04	50.63	8.03
7344.00	30.34	75.99	7324.52	60.74	84.56	98.10	104.11	54.31	9.99

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
				FT	FT	FT	Distance FT	Direction Deg	
7375.00	33.59	74.76	7350.82	64.89	100.44	110.56	119.58	57.14	10.69
7406.00	35.61	74.85	7376.34	69.50	117.43	124.04	136.45	59.38	6.52
7438.00	38.34	75.38	7401.90	74.44	136.03	138.70	155.06	61.31	8.59
7470.00	41.50	77.05	7426.44	79.32	155.97	154.08	174.98	63.04	10.43
7501.00	44.32	77.84	7449.14	83.91	176.57	169.58	195.49	64.58	9.26
7532.00	46.52	77.57	7470.90	88.61	198.14	185.74	217.05	65.91	7.12
7564.00	48.45	76.08	7492.52	93.99	221.10	203.25	240.25	66.97	6.94
7596.00	50.83	75.82	7513.24	99.91	244.75	221.60	264.36	67.79	7.46
7628.00	53.82	74.32	7532.80	106.44	269.22	240.91	289.50	68.43	10.05
7659.00	56.01	73.97	7550.62	113.37	293.62	260.52	314.75	68.89	7.12
7691.00	58.56	73.79	7567.91	120.85	319.48	281.40	341.58	69.28	7.98
7722.00	61.38	72.83	7583.42	128.56	345.19	302.39	368.35	69.57	9.48
7754.00	64.54	72.74	7597.97	136.99	372.41	324.83	396.81	69.80	9.88
7786.00	68.50	72.74	7610.72	145.70	400.43	347.96	426.12	70.01	12.37
7817.00	72.37	73.71	7621.10	154.12	428.40	370.82	455.28	70.21	12.83
7848.00	76.41	74.41	7629.44	162.32	457.10	393.92	485.06	70.45	13.21
7880.00	78.00	74.76	7636.52	170.61	487.18	417.88	516.19	70.70	5.08
7911.00	79.58	75.02	7642.55	178.54	516.54	441.12	546.52	70.93	5.16
7943.00	80.11	74.76	7648.19	186.75	546.95	465.20	577.95	71.15	1.84
7974.00	81.87	74.23	7653.05	194.94	576.45	488.74	608.52	71.32	5.92
8006.00	82.13	73.35	7657.50	203.78	606.88	513.36	640.18	71.44	2.84
8037.00	82.92	69.84	7661.53	213.49	636.04	537.95	670.91	71.45	11.51
8069.00	83.10	65.53	7665.43	225.54	665.41	564.60	702.60	71.28	13.38
8100.00	83.62	61.75	7669.02	239.21	693.00	591.56	733.12	70.96	12.23
8132.00	85.91	59.56	7671.94	254.83	720.77	620.22	764.49	70.53	9.88
8163.00	89.25	56.92	7673.24	271.13	747.10	648.62	794.78	70.05	13.73
8195.00	92.51	54.37	7672.75	289.18	773.51	678.50	825.80	69.50	12.93
8226.00	91.98	51.91	7671.54	307.76	798.29	707.89	855.56	68.92	8.11
8258.00	91.36	49.10	7670.61	328.10	822.97	738.68	885.96	68.26	8.99
8289.00	90.75	45.67	7670.03	349.09	845.78	768.91	914.99	67.57	11.24
8320.00	88.11	43.47	7670.34	371.16	867.53	799.45	943.59	66.84	11.08
8351.00	85.91	40.83	7671.96	394.11	888.30	830.15	971.80	66.07	11.08
8446.00	84.94	33.98	7679.55	469.29	945.79	924.69	1055.82	63.61	7.26
8540.00	86.61	31.52	7686.47	548.12	996.50	1018.36	1137.30	61.19	3.16
8634.00	87.58	33.45	7691.24	627.31	1046.91	1112.16	1220.47	59.07	2.30
8729.00	86.79	33.28	7695.90	706.55	1099.10	1207.02	1306.61	57.27	.85
8824.00	88.20	34.51	7700.05	785.33	1152.03	1301.92	1394.24	55.72	1.97
8844.00	89.08	35.47	7700.53	801.71	1163.49	1321.91	1412.96	55.43	6.51
8940.00	89.16	34.42	7702.00	880.39	1218.47	1417.90	1503.25	54.15	1.10
9035.00	90.66	34.16	7702.15	958.88	1271.99	1512.89	1592.92	52.99	1.60
9129.00	91.36	33.72	7700.50	1036.85	1324.46	1606.87	1682.04	51.94	.88
9223.00	90.75	34.16	7698.77	1114.82	1376.94	1700.84	1771.66	51.01	.80
9318.00	90.84	33.80	7697.45	1193.59	1430.03	1795.82	1862.70	50.15	.39
9413.00	88.02	34.68	7698.39	1272.11	1483.47	1890.80	1954.22	49.39	3.11
9507.00	90.13	34.33	7699.91	1349.56	1536.71	1984.78	2045.19	48.71	2.28

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
				FT	FT	FT	Distance FT	Direction Deg	
9602.00	89.34	33.98	7700.35	1428.17	1590.05	2079.78	2137.27	48.07	.91
9696.00	89.16	35.74	7701.58	1505.30	1643.77	2173.76	2228.88	47.52	1.88
9791.00	86.70	37.49	7705.01	1581.49	1700.38	2268.64	2322.16	47.07	3.18
9886.00	85.74	37.58	7711.27	1656.66	1758.14	2363.32	2415.69	46.70	1.01
9980.00	88.02	36.70	7716.39	1731.48	1814.80	2457.09	2508.29	46.35	2.60
10075.00	87.14	34.77	7720.40	1808.52	1870.23	2551.99	2601.64	45.96	2.23
10169.00	87.67	33.98	7724.66	1886.02	1923.25	2645.89	2693.69	45.56	1.01
10263.00	89.08	33.72	7727.32	1964.05	1975.59	2739.84	2785.76	45.17	1.53
10358.00	88.02	33.63	7729.73	2043.09	2028.25	2834.79	2878.89	44.79	1.12
10451.00	88.55	33.28	7732.51	2120.64	2079.49	2927.72	2970.09	44.44	.68
10545.00	90.31	33.10	7733.45	2199.30	2130.94	3021.68	3062.33	44.10	1.88
10639.00	91.63	33.36	7731.85	2277.92	2182.45	3115.63	3154.68	43.77	1.43
10734.00	89.96	34.77	7730.54	2356.60	2235.65	3210.61	3248.34	43.49	2.30
10828.00	86.44	35.30	7733.49	2433.52	2289.58	3304.55	3341.29	43.25	3.79
10922.00	87.23	35.03	7738.68	2510.25	2343.63	3398.40	3434.23	43.03	.89
11017.00	88.64	34.42	7742.10	2588.27	2397.71	3493.34	3528.20	42.81	1.62
11112.00	87.49	34.95	7745.31	2666.35	2451.74	3588.28	3622.21	42.60	1.33
11207.00	86.00	35.47	7750.70	2743.84	2506.43	3683.12	3716.29	42.41	1.66
11302.00	86.61	35.47	7756.83	2821.05	2561.44	3777.92	3810.42	42.24	.64
11397.00	87.49	35.30	7761.71	2898.39	2616.38	3872.78	3904.63	42.07	.94
11492.00	87.32	35.74	7766.02	2975.64	2671.51	3967.68	3998.92	41.92	.50
11588.00	87.32	34.95	7770.50	3053.86	2726.99	4063.57	4094.20	41.76	.82
11683.00	90.48	34.95	7772.33	3131.70	2781.39	4158.54	4188.52	41.61	3.33
11778.00	87.05	33.80	7774.38	3210.08	2835.01	4253.50	4282.74	41.45	3.81
11873.00	86.88	32.92	7779.41	3289.31	2887.18	4348.33	4376.68	41.27	.94
11968.00	89.60	32.92	7782.32	3369.01	2938.78	4443.23	4470.64	41.10	2.86
12063.00	90.66	32.84	7782.11	3448.79	2990.35	4538.18	4564.69	40.93	1.12
12157.00	90.75	33.63	7780.95	3527.41	3041.86	4632.14	4657.85	40.77	.85
12252.00	88.55	33.45	7781.53	3606.59	3094.35	4727.11	4752.10	40.63	2.32
12347.00	89.25	34.42	7783.35	3685.39	3147.37	4822.08	4846.45	40.50	1.26
12442.00	88.90	35.39	7784.89	3763.29	3201.72	4917.07	4940.99	40.39	1.09
12537.00	89.34	35.12	7786.35	3840.85	3256.55	5012.05	5035.60	40.29	.54
12631.00	89.16	36.35	7787.58	3917.15	3311.45	5106.03	5129.30	40.21	1.32
12725.00	88.37	36.97	7789.60	3992.54	3367.56	5199.95	5223.10	40.15	1.07
12820.00	89.69	37.14	7791.21	4068.34	3424.79	5294.86	5317.95	40.09	1.40
12915.00	89.08	37.76	7792.23	4143.75	3482.56	5389.75	5412.84	40.04	.92
13010.00	88.20	38.55	7794.49	4218.43	3541.23	5484.55	5507.77	40.01	1.24
13105.00	88.20	37.23	7797.47	4293.37	3599.54	5579.36	5602.65	39.98	1.39
13200.00	88.55	35.12	7800.16	4370.02	3655.59	5674.29	5697.40	39.91	2.25
13295.00	89.69	34.77	7801.62	4447.88	3710.00	5769.27	5792.04	39.83	1.26
13390.00	89.25	35.39	7802.50	4525.62	3764.59	5864.27	5886.71	39.76	.80
13485.00	86.97	36.62	7805.64	4602.42	3820.40	5959.18	5981.45	39.70	2.73
13579.00	87.05	36.00	7810.54	4678.07	3875.99	6053.02	6075.16	39.64	.66
13674.00	88.64	36.09	7814.11	4754.82	3931.85	6147.93	6169.91	39.59	1.68
13769.00	88.29	36.44	7816.66	4831.39	3988.02	6242.86	6264.72	39.54	.52

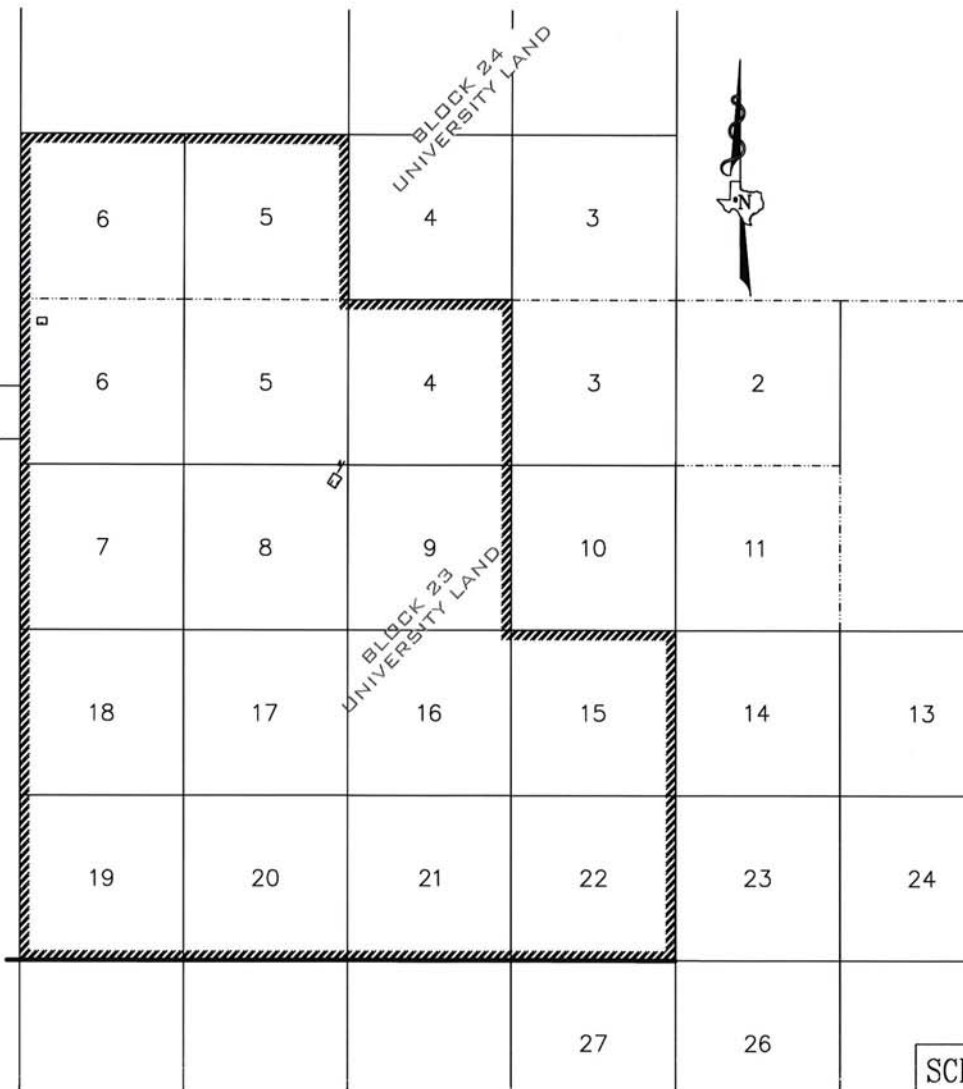
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E Distance FT	Direction Deg	Dogleg Severity Deg/100
13864.00	87.93	37.85	7819.79	4907.07	4045.35	6337.72	6359.58	39.50	1.53
13960.00	87.93	37.49	7823.26	4983.01	4103.98	6433.53	6455.47	39.47	.37
14054.00	87.41	34.33	7827.08	5059.07	4159.06	6527.43	6549.20	39.42	3.40
14149.00	90.48	35.03	7828.83	5137.17	4213.10	6622.40	6643.85	39.36	3.31
14244.00	89.96	33.80	7828.46	5215.54	4266.79	6717.39	6738.50	39.29	1.41
14339.00	89.08	32.05	7829.26	5295.28	4318.42	6812.34	6832.92	39.20	2.06
14433.00	87.85	32.57	7831.78	5374.69	4368.65	6906.22	6926.21	39.10	1.42
14528.00	88.37	31.25	7834.91	5455.29	4418.84	7001.05	7020.42	39.01	1.49
14623.00	90.40	30.46	7835.93	5536.84	4467.55	7095.81	7114.46	38.90	2.29
14718.00	88.99	31.25	7836.44	5618.39	4516.27	7190.59	7208.54	38.79	1.70
14813.00	87.85	34.95	7839.06	5697.93	4568.12	7285.50	7303.02	38.72	4.07
14907.00	88.20	34.42	7842.30	5775.17	4621.58	7379.44	7396.73	38.67	.68
15001.00	89.43	35.65	7844.24	5852.12	4675.53	7473.42	7490.52	38.62	1.85
15094.00	89.34	35.03	7845.24	5927.98	4729.32	7566.40	7583.37	38.58	.67
15189.00	93.12	36.44	7843.20	6005.06	4784.78	7661.35	7678.21	38.55	4.25
15284.00	91.89	35.56	7839.05	6081.84	4840.56	7756.23	7773.02	38.52	1.59
15379.00	89.25	36.79	7838.10	6158.52	4896.63	7851.19	7867.93	38.49	3.07
15474.00	88.02	36.26	7840.36	6234.83	4953.15	7946.11	7962.84	38.46	1.41
15568.00	88.37	35.74	7843.33	6310.84	5008.38	8040.04	8056.71	38.44	.67
15663.00	89.16	35.47	7845.37	6388.07	5063.67	8135.01	8151.57	38.40	.88
15758.00	88.55	35.65	7847.27	6465.33	5118.91	8229.98	8246.44	38.37	.67
15853.00	89.87	36.79	7848.58	6541.96	5175.04	8324.94	8341.36	38.35	1.84
15948.00	91.63	37.06	7847.34	6617.90	5232.10	8419.86	8436.32	38.33	1.87
16043.00	88.46	35.12	7847.26	6694.65	5288.05	8514.82	8531.23	38.30	3.91
16138.00	89.16	34.59	7849.24	6772.59	5342.33	8609.79	8626.04	38.27	.92
16232.00	87.23	34.51	7852.20	6849.97	5395.61	8703.74	8719.79	38.23	2.05
16327.00	88.90	35.39	7855.40	6927.79	5450.00	8798.68	8814.58	38.19	1.99
16421.00	86.26	34.77	7859.37	7004.64	5503.97	8892.59	8908.35	38.16	2.88
16516.00	88.29	35.47	7863.89	7082.25	5558.56	8987.47	9003.11	38.13	2.26
16611.00	88.72	35.30	7866.37	7159.68	5613.55	9082.44	9097.97	38.10	.49
16706.00	88.64	34.95	7868.56	7237.36	5668.20	9177.41	9192.81	38.07	.38
16801.00	87.85	35.21	7871.47	7315.06	5722.77	9272.36	9287.64	38.04	.88
16895.00	88.81	35.30	7874.21	7391.79	5777.01	9366.32	9381.49	38.01	1.03
16990.00	89.16	35.03	7875.89	7469.44	5831.71	9461.30	9476.36	37.98	.47
17085.00	90.13	35.12	7876.48	7547.19	5886.30	9556.29	9571.24	37.95	1.03
17179.00	90.57	35.21	7875.90	7624.03	5940.44	9650.29	9665.12	37.92	.48
17274.00	91.71	35.21	7874.01	7701.63	5995.20	9745.27	9760.00	37.90	1.20
17369.00	92.77	35.03	7870.30	7779.28	6049.81	9840.19	9854.81	37.87	1.13
17464.00	94.00	35.30	7864.69	7856.80	6104.43	9935.02	9949.54	37.85	1.33
17505.00	94.97	34.86	7861.48	7890.25	6127.92	9975.89	9990.37	37.83	2.60
Projection To Bit									
17572.00	94.97	34.86	7855.68	7945.02	6166.07	10042.64	10057.03	37.81	.00

N.T. WILSON
BLOCK 195

W.B. TUNNELL
BLOCK 198

BLOCK 24
UNIVERSITY LAND

BLOCK 23
UNIVERSITY LAND



RJ Daum 3-17-17

SCHUMANN ENGINEERING CO., INC.

REGISTERED PROFESSIONAL LAND SURVEYORS REGISTERED PROFESSIONAL CIVIL ENGINEERS

Civil Engineering ~ Land Surveying

TEXAS FIRM No. F1680 TEXAS FIRM No. 10149500

408 N. PECOS STREET - P. O. BOX 504 Office (432) 684-5548
MIDLAND, TEXAS 79702-0504 Fax (432) 684-6973

LEASE EXHIBIT

PERISCOPE OPERATING, LLC

CUNNING WOLF "UL" LEASE
10240 ACRES

BLOCKS 23 AND 24
UNIVERSITY LANDS SURVEY,

PECOS COUNTY, TEXAS

QUAD: EAST MESA SW
SCALE: 1" = 4000'

PROJECT: 75534POL
JOB: 75,534 LE