

Scientific Drilling



TEXACO E & P INC.

Field: Vacuum Glorieta West

Site: Lea County, NM

Well: VGWU #98

Wellpath: VH/HH - Job #32K0599110/111

Survey: 5/25/99-6/5/99

SUR: P-937/S & 532/E

BHL: I-1937/S & 540/E

API #: 30-025-32263

Gyro Footage: 0'-5800'

MWD Footage: 5809'-6873'

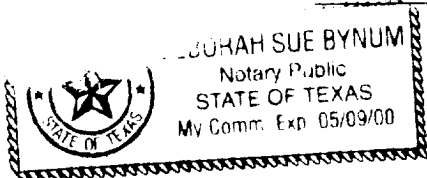
Survey: Sec. 35, T17S, R34E

K.O.P.: 5800'

This survey is correct to the best of my knowledge and is supported by actual field data.

Scott Woody Company Representative

Notorized this date 25th of March, 2000.



Deborah Sue Bynum
Midland Co., TX

SCIENTIFIC DRILLING SURVEY REPORT

Company: TEXACO E & P INC.
Field: Vacuum Glorieta West
Site: Lea County, NM
Well: VGWU #98
Wellpath: VH/HH - Job #32K0599110/1

Date: 3/23/2000 **Time:** 13:43:07 **Page:** 1
Co-ordinate(NE) Reference: Site: Lea County, NM, True North
Vertical (TVD) Reference: SITE 0.0 above Mean Sea Level
Section (VS) Reference: Slot (0.0E,0.0N,0.0Azi)
Survey Calculation Method: Minimum Curvature

Survey: 5/25/99-6/5/99
 KSRG 0'-5800'/MWD 6809'-6873'

Start Date: 6/23/1999

Company: S.D.I./Ryan
Tool: KEEPER

Engineer: DeSpain/Burger

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS d/100ft	ClsA deg	ClsD ft
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.0
100.0	0.40	185.32	100.0	-0.3	0.0	-0.3	0.40	185.32	0.3
200.0	0.27	258.76	200.0	-0.7	-0.3	-0.7	0.41	201.76	0.8
300.0	0.34	266.94	300.0	-0.8	-0.8	-0.8	0.08	225.72	1.1
400.0	0.15	259.87	400.0	-0.8	-1.2	-0.8	0.19	236.01	1.5
500.0	0.26	205.21	500.0	-1.1	-1.5	-1.1	0.21	234.02	1.8
600.0	0.21	221.57	600.0	-1.4	-1.7	-1.4	0.08	230.15	2.2
700.0	0.26	93.39	700.0	-1.6	-1.6	-1.6	0.42	225.44	2.2
800.0	0.32	59.52	800.0	-1.4	-1.1	-1.4	0.18	217.98	1.8
900.0	0.19	91.24	900.0	-1.3	-0.7	-1.3	0.19	208.83	1.5
1000.0	0.31	102.25	1000.0	-1.4	-0.3	-1.4	0.13	191.79	1.4
1100.0	0.41	126.98	1100.0	-1.6	0.3	-1.6	0.18	170.71	1.7
1200.0	0.48	138.32	1200.0	-2.2	0.8	-2.2	0.11	158.94	2.3
1300.0	0.50	128.50	1300.0	-2.7	1.5	-2.7	0.09	152.12	3.1
1400.0	0.49	127.84	1400.0	-3.3	2.1	-3.3	0.01	146.97	3.9
1500.0	0.42	128.28	1500.0	-3.8	2.8	-3.8	0.07	143.81	4.7
1600.0	0.48	130.52	1600.0	-4.3	3.4	-4.3	0.06	141.76	5.4
1700.0	0.42	153.51	1700.0	-4.9	3.8	-4.9	0.19	141.69	6.2
1800.0	0.37	148.86	1800.0	-5.5	4.2	-5.5	0.06	142.65	6.9
1900.0	0.58	120.31	1900.0	-6.0	4.8	-6.0	0.31	141.48	7.7
2000.0	0.79	116.95	2000.0	-6.6	5.8	-6.6	0.21	138.42	8.8
2100.0	0.81	113.51	2099.9	-7.2	7.1	-7.2	0.05	135.29	10.1
2200.0	0.98	113.18	2199.9	-7.8	8.5	-7.8	0.17	132.39	11.5
2300.0	1.03	102.36	2299.9	-8.3	10.2	-8.3	0.20	129.20	13.2
2400.0	1.07	93.14	2399.9	-8.6	12.0	-8.6	0.17	125.48	14.7
2500.0	1.37	78.93	2499.9	-8.4	14.1	-8.4	0.42	120.70	16.4
2600.0	1.45	80.10	2599.8	-7.9	16.5	-7.9	0.09	115.63	18.3
2700.0	1.68	75.89	2699.8	-7.4	19.2	-7.4	0.26	110.97	20.6
2800.0	1.77	77.55	2799.8	-6.7	22.1	-6.7	0.10	106.76	23.1
2900.0	1.85	74.63	2899.7	-5.9	25.2	-5.9	0.12	103.19	25.9
3000.0	1.88	77.33	2999.7	-5.1	28.3	-5.1	0.09	100.23	28.8
3100.0	1.95	75.59	3099.6	-4.3	31.6	-4.3	0.09	97.81	31.9
3200.0	1.95	75.05	3199.5	-3.5	34.9	-3.5	0.02	95.68	35.1
3300.0	1.77	75.22	3299.5	-2.6	38.0	-2.6	0.18	93.97	38.1
3400.0	1.74	72.27	3399.4	-1.8	41.0	-1.8	0.10	92.49	41.0
3500.0	1.58	65.42	3499.4	-0.7	43.7	-0.7	0.25	90.98	43.7
3600.0	1.69	59.33	3599.4	0.6	46.2	0.6	0.21	89.28	46.2
3700.0	1.69	56.37	3699.3	2.1	48.7	2.1	0.09	87.47	48.7
3800.0	1.63	54.88	3799.3	3.8	51.1	3.8	0.07	85.76	51.2
3900.0	1.69	58.98	3899.2	5.4	53.5	5.4	0.13	84.28	53.8
4000.0	1.80	61.27	3999.2	6.9	56.1	6.9	0.13	83.02	56.6
4100.0	1.88	59.94	4099.1	8.5	58.9	8.5	0.09	81.84	59.5
4200.0	1.81	55.58	4199.1	10.2	61.7	10.2	0.16	80.64	62.5
4300.0	1.75	56.43	4299.0	11.9	64.2	11.9	0.07	79.50	65.3
4400.0	1.94	61.94	4399.0	13.5	67.0	13.5	0.26	78.57	68.4
4500.0	1.89	60.89	4498.9	15.1	69.9	15.1	0.06	77.78	71.6
4600.0	1.85	70.76	4598.9	16.5	72.9	16.5	0.32	77.26	74.7
4700.0	2.03	63.17	4698.8	17.8	76.0	17.8	0.31	76.81	78.1

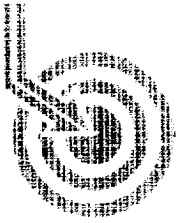
SCIENTIFIC DRILLING SURVEY REPORT

Company: TEXACO E & P INC.
 Field: Vacuum Glorieta West
 Site: Lea County, NM
 Well: VGWU #98
 Wellpath: VH/HH - Job #32K0599110/1

Date: 3/23/2000 Time: 13:43:07 Page: 2
 Co-ordinate(NE) Reference: Site: Lea County, NM, True North
 Vertical (TVD) Reference: SITE 0.0 above Mean Sea Level
 Section (VS) Reference: Slot (0.0E,0.0N,0.0AZI)
 Survey Calculation Method: Minimum Curvature

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS d/100ft	ClsA deg	ClsD ft
4800.0	1.98	66.97	4798.8	19.3	79.2	19.3	0.14	76.31	81.5
4900.0	1.91	64.24	4898.7	20.7	82.3	20.7	0.12	75.89	84.8
5000.0	1.73	69.80	4998.7	21.9	85.2	21.9	0.25	75.56	88.0
5100.0	1.68	68.27	5098.6	23.0	88.0	23.0	0.07	75.35	90.9
5200.0	1.55	69.26	5198.6	24.0	90.6	24.0	0.13	75.15	93.7
5300.0	1.61	73.34	5298.5	24.9	93.2	24.9	0.13	75.04	96.5
5400.0	1.49	68.54	5398.5	25.8	95.8	25.8	0.18	74.93	99.2
5500.0	1.59	64.08	5498.5	26.9	98.2	26.9	0.16	74.71	101.8
5600.0	1.60	70.59	5598.4	27.9	100.8	27.9	0.18	74.51	104.6
5700.0	1.34	75.04	5698.4	28.7	103.2	28.7	0.28	74.46	107.1
5800.0	1.16	77.85	5798.4	29.2	105.3	29.2	0.19	74.50	109.3
5809.0	1.20	77.90	5807.4	29.2	105.5	29.2	0.44	74.51	109.5
5887.0	30.40	2.40	5881.7	49.6	107.2	49.6	38.62	65.16	118.1
5917.0	42.70	3.10	5905.8	67.4	108.1	67.4	41.02	58.04	127.4
5949.0	55.40	3.80	5926.7	91.5	109.5	91.5	39.72	50.13	142.7
5980.0	67.70	2.80	5941.4	118.7	111.1	118.7	39.78	43.11	162.5
5990.0	71.80	2.80	5944.9	128.0	111.5	128.0	41.00	41.06	169.8
6000.0	75.70	2.40	5947.7	137.6	112.0	137.6	39.19	39.13	177.4
6009.0	79.10	3.50	5949.7	146.4	112.4	146.4	39.62	37.52	184.6
6042.0	89.20	2.40	5953.0	179.1	114.1	179.1	30.78	32.50	212.4
6073.0	88.50	357.10	5953.6	210.1	114.0	210.1	17.24	28.48	239.0
6107.0	90.30	352.90	5954.0	244.0	111.0	244.0	13.44	24.47	268.0
6136.0	92.00	351.50	5953.4	272.7	107.1	272.7	7.59	21.44	293.0
6168.0	91.40	351.50	5952.5	304.3	102.3	304.3	1.87	18.59	321.1
6199.0	90.60	351.50	5951.9	335.0	97.8	335.0	2.58	16.27	349.0
6231.0	91.30	350.50	5951.4	366.6	92.8	366.6	3.81	14.20	378.1
6262.0	92.70	351.20	5950.3	397.2	87.8	397.2	5.05	12.47	406.8
6293.0	93.40	350.80	5948.7	427.7	83.0	427.7	2.60	10.98	435.7
6325.0	93.90	350.10	5946.6	459.2	77.7	459.2	2.68	9.60	465.8
6357.0	94.00	349.40	5944.4	490.6	72.0	490.6	2.20	8.35	495.9
6388.0	91.40	349.40	5943.0	521.1	66.3	521.1	8.39	7.25	525.3
6420.0	91.30	349.40	5942.2	552.5	60.4	552.5	0.31	6.24	555.8
6452.0	91.60	349.00	5941.4	583.9	54.4	583.9	1.56	5.33	586.5
6484.0	89.50	349.80	5941.1	615.4	48.5	615.4	7.02	4.51	617.3
6515.0	90.40	349.40	5941.1	645.9	43.0	645.9	3.18	3.80	647.3
6546.0	91.40	349.80	5940.6	676.4	37.4	676.4	3.47	3.16	677.4
6578.0	90.70	353.30	5940.0	708.0	32.7	708.0	11.15	2.64	708.8
6609.0	92.20	353.30	5939.3	738.8	29.0	738.8	4.84	2.25	739.4
6641.0	88.60	351.90	5939.0	770.5	24.9	770.5	12.07	1.85	770.9
6673.0	85.60	351.90	5940.7	802.2	20.4	802.2	9.37	1.46	802.4
6704.0	86.30	351.90	5942.8	832.8	16.1	832.8	2.26	1.10	832.9
6736.0	87.10	352.20	5944.7	864.4	11.6	864.4	2.67	0.77	864.5
6768.0	87.70	351.20	5946.1	896.0	7.0	896.0	3.64	0.45	896.1
6799.0	88.40	351.90	5947.2	926.7	2.5	926.7	3.19	0.15	926.7
6831.0	88.90	351.90	5947.9	958.4	-2.0	958.4	1.56	359.88	958.4
6873.0	88.90	351.90	5948.8	999.9	-7.9	999.9	0.00	359.54	1000.0

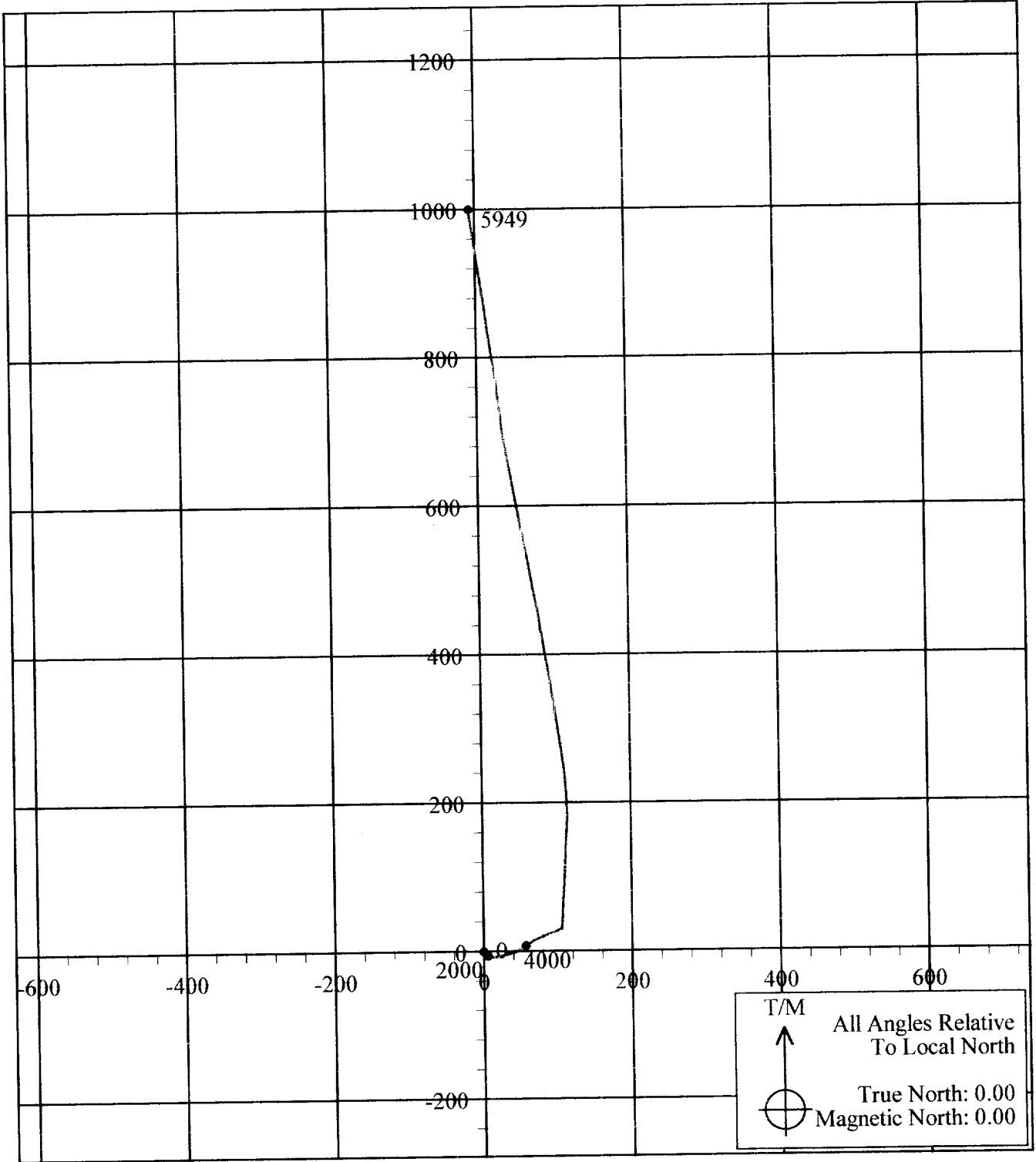


**Scientific
Drilling**

TEXACO E & P INC
Field: Vacuum Glorieta West
Site: Lea County, NM
Well: VGWU #98
Wellpath: VH/HH - Job #32K0599110/111
Survey: 5/25/99-6/5/99



South(-)/North(+) [200ft/in]



West(-)/East(+) [200ft/in]