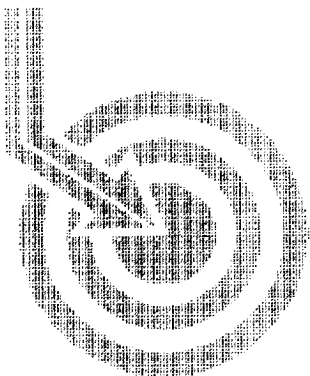




Scientific Drilling



TEXACO E & P INC.

Field: Vacuum Glorieta West

Site: Lea County, NM

Well: VGWU #60

Wellpath: VH/HH - Job #32K0299041 & 042

Survey: 2/22/99-2/27/99

API #: 30-025-30716

Gyro Footage: 0'-5874'

MWD Footage: 5925'-7184'

Survey: Sec. 36, T17S, R34E

K.O.P.: 5874'

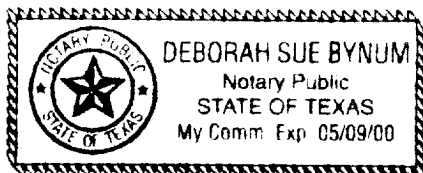
SUR: 940/N & 2308/E
B - 36-17s-34e

BHL: 789/N & 1097/E
A - 36-17s-34e

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

David Neely Company Representative

Notorized this date 25th of March, 2000.



Deborah Sue Bynum
Midland Co., Tex

MS

SCIENTIFIC DRILLING SURVEY REPORT

Company: TEXACO E & P INC.
Field: Vacuum Glorieta West
Site: Lea County, NM
Well: VGWU #60
Wellpath: VH/HH - Job #32K0299041 &

Date: 3/9/2000 Time: 12:33:33 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: 2/22/99-2/27/99
KSRG 0'-5874'/MWD 5925'-7184'

Start Date: 3/9/2000

Company: SDI & DMI
Tool: KEEPER

Engineer: DeSpain/Holland

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	323.37	100.0	0.3	-0.2	0.3	0.40	323.37	0.3
200.0	0.04	12.78	200.0	0.6	-0.4	0.6	0.38	325.48	0.7
300.0	0.19	15.89	300.0	0.8	-0.4	0.8	0.15	335.70	0.9
400.0	0.20	7.38	400.0	1.1	-0.3	1.1	0.03	345.59	1.2
500.0	0.07	11.83	500.0	1.4	-0.3	1.4	0.13	349.41	1.4
600.0	0.06	8.35	600.0	1.5	-0.2	1.5	0.01	350.97	1.5
700.0	0.03	85.98	700.0	1.5	-0.2	1.5	0.06	352.53	1.5
800.0	0.16	184.98	800.0	1.4	-0.2	1.4	0.17	352.37	1.4
900.0	0.27	183.18	900.0	1.0	-0.2	1.0	0.11	348.20	1.0
1000.0	0.31	190.22	1000.0	0.5	-0.3	0.5	0.05	331.77	0.6
1100.0	0.34	188.91	1100.0	-0.1	-0.4	-0.1	0.03	261.59	0.4
1200.0	0.30	216.94	1200.0	-0.6	-0.6	-0.6	0.16	225.62	0.8
1300.0	0.20	267.50	1300.0	-0.8	-0.9	-0.8	0.23	229.34	1.2
1400.0	0.14	195.28	1400.0	-0.9	-1.1	-0.9	0.21	230.93	1.4
1500.0	0.36	202.09	1500.0	-1.3	-1.3	-1.3	0.22	223.87	1.8
1600.0	0.34	223.04	1600.0	-1.8	-1.6	-1.8	0.13	220.99	2.4
1700.0	0.10	102.94	1700.0	-2.1	-1.7	-2.1	0.40	219.56	2.7
1800.0	0.12	209.99	1800.0	-2.2	-1.7	-2.2	0.18	217.56	2.7
1900.0	0.09	197.89	1900.0	-2.3	-1.7	-2.3	0.04	216.76	2.9
2000.0	0.18	99.06	2000.0	-2.4	-1.6	-2.4	0.21	213.53	2.9
2100.0	0.26	29.81	2100.0	-2.3	-1.3	-2.3	0.26	210.72	2.6
2200.0	0.24	80.28	2200.0	-2.0	-1.0	-2.0	0.21	206.78	2.3
2300.0	0.40	81.63	2300.0	-1.9	-0.5	-1.9	0.16	193.62	2.0
2400.0	0.52	52.47	2400.0	-1.6	0.2	-1.6	0.26	171.66	1.6
2500.0	0.50	45.14	2500.0	-1.0	0.9	-1.0	0.07	138.56	1.4
2600.0	0.77	60.25	2600.0	-0.4	1.8	-0.4	0.32	102.06	1.8
2700.0	0.94	43.19	2700.0	0.5	2.9	0.5	0.30	79.46	3.0
2800.0	0.74	48.77	2799.9	1.6	4.0	1.6	0.22	68.51	4.3
2900.0	0.80	63.07	2899.9	2.3	5.1	2.3	0.20	65.60	5.6
3000.0	0.82	44.66	2999.9	3.1	6.2	3.1	0.26	63.24	7.0
3100.0	0.59	58.52	3099.9	3.9	7.2	3.9	0.28	61.34	8.2
3200.0	0.65	10.92	3199.9	4.7	7.7	4.7	0.50	58.41	9.1
3300.0	0.61	22.72	3299.9	5.8	8.0	5.8	0.14	54.19	9.9
3400.0	0.52	345.48	3399.9	6.7	8.1	6.7	0.37	50.38	10.5
3500.0	0.70	337.04	3499.9	7.7	7.8	7.7	0.20	45.16	11.0
3600.0	0.75	345.94	3599.9	8.9	7.4	8.9	0.12	39.56	11.6
3700.0	0.69	339.90	3699.9	10.1	7.0	10.1	0.10	34.68	12.3
3800.0	0.55	328.75	3799.9	11.1	6.5	11.1	0.18	30.54	12.9
3900.0	0.66	316.19	3899.9	11.9	5.9	11.9	0.17	26.32	13.3
4000.0	0.65	314.71	3999.9	12.7	5.1	12.7	0.02	21.81	13.7
4100.0	0.61	311.51	4099.9	13.5	4.3	13.5	0.05	17.66	14.2
4200.0	0.77	310.42	4199.9	14.3	3.4	14.3	0.16	13.34	14.7
4300.0	0.70	322.21	4299.8	15.2	2.5	15.2	0.17	9.34	15.4
4400.0	0.74	330.15	4399.8	16.2	1.8	16.2	0.11	6.33	16.3
4500.0	0.73	337.04	4499.8	17.4	1.2	17.4	0.09	4.06	17.4
4600.0	0.72	357.90	4599.8	18.6	1.0	18.6	0.26	2.96	18.6
4700.0	0.81	0.25	4699.8	19.9	0.9	19.9	0.10	2.70	20.0

SCIENTIFIC DRILLING SURVEY REPORT

Company: TEXACO E & P INC.
Field: Vacuum Glorieta West
Site: Lea County, NM
Well: VGWU #60
Wellpath: VH/HH - Job #32K0299041 &

Date: 3/9/2000 Time: 12:33:33 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	0.99	6.66	4799.8	21.5	1.0	21.5	0.21	2.78	21.5
4900.0	1.17	12.81	4899.8	23.4	1.4	23.4	0.21	3.36	23.4
5000.0	1.18	15.93	4999.8	25.3	1.9	25.3	0.06	4.24	25.4
5100.0	1.22	7.76	5099.7	27.4	2.3	27.4	0.18	4.81	27.5
5200.0	1.28	3.05	5199.7	29.6	2.5	29.6	0.12	4.85	29.7
5300.0	1.06	353.84	5299.7	31.6	2.5	31.6	0.29	4.47	31.7
5400.0	1.17	4.37	5399.7	33.5	2.4	33.5	0.23	4.18	33.6
5500.0	0.81	353.44	5499.7	35.2	2.4	35.2	0.40	3.97	35.3
5600.0	1.13	336.15	5599.6	36.8	2.0	36.8	0.43	3.05	36.9
5700.0	1.19	359.34	5699.6	38.8	1.6	38.8	0.47	2.30	38.8
5800.0	1.05	354.49	5799.6	40.7	1.5	40.7	0.17	2.05	40.8
5874.9	1.28	340.38	5874.5	42.2	1.1	42.2	0.49	1.50	42.2
5925.0	11.80	80.10	5924.2	43.6	6.0	43.6	24.11	7.81	44.0
5957.0	28.00	82.10	5954.2	45.2	16.7	45.2	50.66	20.29	48.2
5988.0	44.50	83.80	5979.1	47.4	34.9	47.4	53.32	36.32	58.8
6020.0	61.50	83.60	5998.3	50.2	60.2	50.2	53.13	50.15	78.4
6049.0	77.20	80.20	6008.5	54.1	86.9	54.1	55.23	58.12	102.4
6080.0	84.60	80.30	6013.4	59.2	117.1	59.2	23.87	63.16	131.2
6112.0	86.30	80.30	6016.0	64.6	148.5	64.6	5.31	66.49	162.0
6144.0	86.80	80.40	6017.9	70.0	180.0	70.0	1.59	68.76	193.1
6175.0	87.20	80.90	6019.5	75.0	210.6	75.0	2.06	70.39	223.5
6207.0	86.60	80.80	6021.2	80.1	242.1	80.1	1.90	71.70	255.0
6239.0	86.60	80.90	6023.1	85.2	273.6	85.2	0.31	72.71	286.6
6270.0	87.70	81.50	6024.7	89.9	304.2	89.9	4.04	73.54	317.2
6301.0	90.00	82.30	6025.3	94.3	334.9	94.3	7.86	74.28	347.9
6333.0	90.10	82.80	6025.3	98.4	366.7	98.4	1.59	74.97	379.6
6364.0	88.40	82.80	6025.7	102.3	397.4	102.3	5.48	75.56	410.4
6396.0	88.30	82.30	6026.6	106.5	429.1	106.5	1.59	76.07	442.1
6428.0	86.20	81.60	6028.1	110.9	460.8	110.9	6.92	76.46	473.9
6459.0	86.70	81.70	6030.1	115.4	491.4	115.4	1.64	76.78	504.8
6491.0	89.80	82.20	6031.0	119.9	523.0	119.9	9.81	77.09	536.6
6522.0	90.90	82.40	6030.8	124.1	553.8	124.1	3.61	77.37	567.5
6553.0	90.60	82.30	6030.4	128.2	584.5	128.2	1.02	77.63	598.4
6584.0	89.30	82.20	6030.5	132.4	615.2	132.4	4.21	77.86	629.3
6616.0	88.20	82.40	6031.2	136.6	646.9	136.6	3.49	78.07	661.2
6648.0	88.80	82.50	6032.0	140.9	678.6	140.9	1.90	78.27	693.1
6678.0	90.20	82.60	6032.3	144.7	708.4	144.7	4.68	78.45	723.0
6710.0	90.70	82.30	6032.0	148.9	740.1	148.9	1.82	78.62	754.9
6740.0	90.60	82.00	6031.7	153.0	769.8	153.0	1.05	78.76	784.9
6771.0	87.90	81.60	6032.1	157.5	800.5	157.5	8.80	78.87	815.8
6803.0	87.90	81.30	6033.3	162.2	832.1	162.2	0.94	78.97	847.8
6835.0	88.90	81.30	6034.1	167.1	863.7	167.1	3.12	79.05	879.7
6867.0	91.50	82.70	6034.0	171.5	895.4	171.5	9.23	79.16	911.7
6898.0	89.30	82.50	6033.8	175.5	926.1	175.5	7.13	79.27	942.6
6930.0	88.80	82.20	6034.3	179.8	957.9	179.8	1.82	79.37	974.6
6962.0	90.90	84.60	6034.4	183.4	989.6	183.4	9.97	79.50	1006.5
6993.0	90.30	85.30	6034.1	186.2	1020.5	186.2	2.97	79.66	1037.4
7025.0	91.60	85.30	6033.6	188.8	1052.4	188.8	4.06	79.83	1069.2
7057.0	91.60	85.70	6032.7	191.3	1084.3	191.3	1.25	79.99	1101.0
7089.0	92.60	86.30	6031.5	193.5	1116.2	193.5	3.64	80.16	1132.8
7121.0	93.20	86.40	6029.9	195.6	1148.1	195.6	1.90	80.33	1164.6
7152.0	93.90	86.50	6028.0	197.5	1179.0	197.5	2.28	80.49	1195.4

SCIENTIFIC DRILLING SURVEY REPORT

Company: TEXACO E & P INC.
 Field: Vacuum Glorieta West
 Site: Lea County, NM
 Well: VGWU #60
 Wellpath: VH/VH - Job #32K0299041 &

Date: 3/9/2000 Time: 12:33:33 Page: 3
 Co-ordinate(N/E) 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
7184.0	93.80	86.90	6025.8	199.3	1210.8	199.3	1.29	80.65	1227.1



**Scientific
Drilling**

TEXACO E & P INC.

Field: Vacuum Glorieta West

Site: Lea County, NM

Well: VGWU #60

Wellpath: VH/HH - Job #32K0299041 & 042

Survey: 2/22/99-2/27/99

