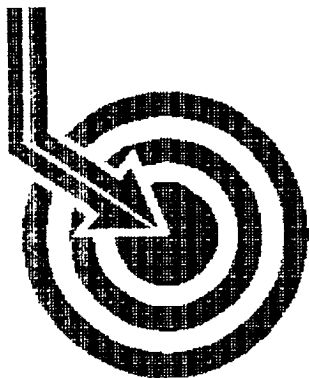




# Scientific Drilling



TEXACO E & P INC.

Field: Unknown

Site: Lea County, NM

Well: Cotton Draw #88

Wellpath: VH - Job #32K0900383

Survey: 6/21/00

Unit K-7-25s-32e

SUR: 2210/5 # 1360/6

BHL: 2392 # 1421/0

30-025-35086

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

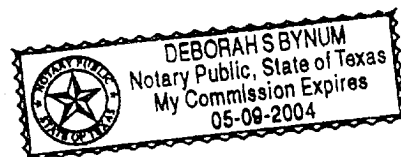
*Sam Nady*

.....Company Representative

Notorized this date 8<sup>th</sup> of November, 2000.

*Deborah Sue Bynum*

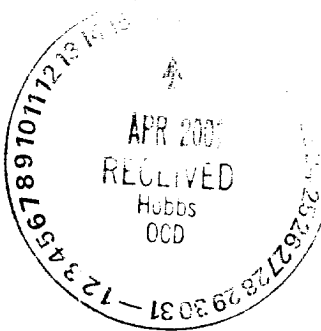
Notary Signature  
County of Midland  
State of Texas



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ROSWELL, NM



# SCIENTIFIC DRILLING SURVEY REPORT

Company: TEXACO E & P INC.  
Field: Unknown  
Site: Lea County, NM  
Well: Cotton Draw #88  
Wellpath: VH - Job #32K0900383

Date: 11/8/2000 Time: 12:53:32 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: 6/21/00  
KSRG 0'-13050'

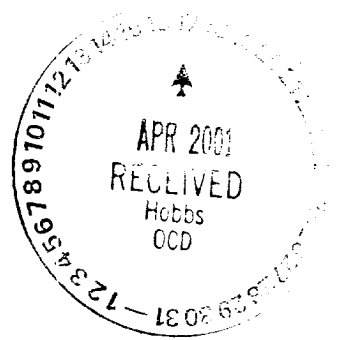
Start Date: 9/22/2000

Company: SDI  
Tool: KEEPER

Engineer: Gary DeSpain

## Survey

| MD<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | N/S<br>ft | E/W<br>ft | VS<br>ft | DLS<br>d/100ft | ClsA<br>deg | ClsD<br>ft |
|----------|-------------|-------------|-----------|-----------|-----------|----------|----------------|-------------|------------|
| 0.0      | 0.00        | 0.00        | 0.0       | 0.0       | 0.0       | 0.0      | 0.00           | 0.00        | 0.0        |
| 100.0    | 0.09        | 358.73      | 100.0     | 0.1       | 0.0       | 0.1      | 0.09           | 358.73      | 0.1        |
| 200.0    | 0.33        | 17.40       | 200.0     | 0.4       | 0.1       | 0.4      | 0.25           | 10.83       | 0.4        |
| 300.0    | 0.35        | 7.24        | 300.0     | 1.0       | 0.2       | 1.0      | 0.06           | 11.60       | 1.0        |
| 400.0    | 0.80        | 47.04       | 400.0     | 1.8       | 0.8       | 1.8      | 0.58           | 22.93       | 1.9        |
| 500.0    | 1.62        | 63.08       | 500.0     | 2.9       | 2.5       | 2.9      | 0.88           | 41.04       | 3.9        |
| 600.0    | 2.41        | 52.13       | 599.9     | 4.8       | 5.4       | 4.8      | 0.88           | 48.41       | 7.3        |
| 700.0    | 2.18        | 47.45       | 699.8     | 7.4       | 8.5       | 7.4      | 0.30           | 48.94       | 11.3       |
| 800.0    | 1.55        | 59.40       | 799.8     | 9.4       | 11.1      | 9.4      | 0.74           | 49.72       | 14.5       |
| 900.0    | 1.36        | 55.97       | 899.7     | 10.7      | 13.2      | 10.7     | 0.21           | 50.92       | 17.0       |
| 1000.0   | 1.53        | 66.86       | 999.7     | 11.9      | 15.4      | 11.9     | 0.32           | 52.30       | 19.5       |
| 1100.0   | 1.33        | 67.28       | 1099.7    | 12.9      | 17.7      | 12.9     | 0.20           | 53.96       | 21.9       |
| 1200.0   | 1.40        | 79.52       | 1199.7    | 13.6      | 20.0      | 13.6     | 0.30           | 55.84       | 24.2       |
| 1300.0   | 1.39        | 75.04       | 1299.6    | 14.1      | 22.4      | 14.1     | 0.11           | 57.77       | 26.5       |
| 1400.0   | 1.29        | 74.56       | 1399.6    | 14.7      | 24.6      | 14.7     | 0.10           | 59.14       | 28.7       |
| 1500.0   | 1.34        | 72.96       | 1499.6    | 15.4      | 26.8      | 15.4     | 0.06           | 60.21       | 30.9       |
| 1600.0   | 1.40        | 74.60       | 1599.5    | 16.0      | 29.1      | 16.0     | 0.07           | 61.18       | 33.2       |
| 1700.0   | 1.32        | 80.53       | 1699.5    | 16.5      | 31.4      | 16.5     | 0.16           | 62.25       | 35.5       |
| 1800.0   | 1.32        | 74.70       | 1799.5    | 17.0      | 33.7      | 17.0     | 0.13           | 63.18       | 37.8       |
| 1900.0   | 1.22        | 75.97       | 1899.5    | 17.6      | 35.8      | 17.6     | 0.10           | 63.85       | 39.9       |
| 2000.0   | 1.35        | 76.62       | 1999.4    | 18.1      | 38.0      | 18.1     | 0.13           | 64.50       | 42.1       |
| 2100.0   | 1.27        | 76.98       | 2099.4    | 18.7      | 40.2      | 18.7     | 0.08           | 65.13       | 44.4       |
| 2200.0   | 1.26        | 80.80       | 2199.4    | 19.1      | 42.4      | 19.1     | 0.08           | 65.78       | 46.5       |
| 2300.0   | 1.28        | 76.87       | 2299.4    | 19.5      | 44.6      | 19.5     | 0.09           | 66.37       | 48.7       |
| 2400.0   | 1.31        | 78.40       | 2399.3    | 20.0      | 46.8      | 20.0     | 0.05           | 66.87       | 50.9       |
| 2500.0   | 1.32        | 78.16       | 2499.3    | 20.5      | 49.0      | 20.5     | 0.01           | 67.36       | 53.1       |
| 2600.0   | 1.27        | 80.40       | 2599.3    | 20.9      | 51.3      | 20.9     | 0.07           | 67.84       | 55.3       |
| 2700.0   | 1.41        | 81.83       | 2699.3    | 21.2      | 53.6      | 21.2     | 0.14           | 68.37       | 57.6       |
| 2800.0   | 1.47        | 79.96       | 2799.2    | 21.6      | 56.0      | 21.6     | 0.08           | 68.89       | 60.1       |
| 2900.0   | 1.26        | 82.91       | 2899.2    | 22.0      | 58.4      | 22.0     | 0.22           | 69.36       | 62.4       |
| 3000.0   | 1.17        | 90.56       | 2999.2    | 22.1      | 60.5      | 22.1     | 0.19           | 69.92       | 64.4       |
| 3100.0   | 1.09        | 94.20       | 3099.2    | 22.0      | 62.5      | 22.0     | 0.11           | 70.57       | 66.3       |
| 3200.0   | 1.04        | 99.59       | 3199.1    | 21.8      | 64.3      | 21.8     | 0.11           | 71.26       | 67.9       |
| 3300.0   | 1.10        | 99.23       | 3299.1    | 21.5      | 66.2      | 21.5     | 0.06           | 71.99       | 69.6       |
| 3400.0   | 1.11        | 104.19      | 3399.1    | 21.1      | 68.1      | 21.1     | 0.10           | 72.76       | 71.3       |
| 3500.0   | 0.97        | 101.50      | 3499.1    | 20.7      | 69.8      | 20.7     | 0.15           | 73.47       | 72.8       |
| 3600.0   | 0.85        | 109.61      | 3599.1    | 20.3      | 71.3      | 20.3     | 0.18           | 74.12       | 74.2       |
| 3700.0   | 1.06        | 120.09      | 3699.1    | 19.6      | 72.8      | 19.6     | 0.27           | 74.95       | 75.4       |
| 3800.0   | 1.03        | 116.97      | 3799.0    | 18.7      | 74.4      | 18.7     | 0.06           | 75.89       | 76.8       |
| 3900.0   | 1.18        | 113.41      | 3899.0    | 17.9      | 76.2      | 17.9     | 0.16           | 76.78       | 78.3       |
| 4000.0   | 1.45        | 118.54      | 3999.0    | 16.9      | 78.3      | 16.9     | 0.29           | 77.82       | 80.1       |
| 4100.0   | 1.64        | 113.42      | 4099.0    | 15.7      | 80.7      | 15.7     | 0.23           | 78.98       | 82.2       |
| 4200.0   | 1.83        | 119.48      | 4198.9    | 14.4      | 83.4      | 14.4     | 0.26           | 80.23       | 84.6       |
| 4300.0   | 1.78        | 120.59      | 4298.9    | 12.8      | 86.1      | 12.8     | 0.06           | 81.56       | 87.0       |
| 4400.0   | 1.57        | 126.85      | 4398.8    | 11.2      | 88.5      | 11.2     | 0.28           | 82.81       | 89.2       |
| 4500.0   | 1.52        | 125.50      | 4498.8    | 9.6       | 90.7      | 9.6      | 0.06           | 83.97       | 91.2       |
| 4600.0   | 1.56        | 130.29      | 4598.7    | 7.9       | 92.8      | 7.9      | 0.13           | 85.12       | 93.2       |
| 4700.0   | 1.39        | 124.71      | 4698.7    | 6.4       | 94.9      | 6.4      | 0.22           | 86.17       | 95.1       |



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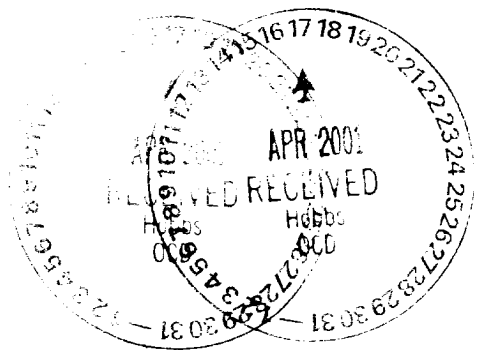
# SCIENTIFIC DRILLING SURVEY REPORT

Company: TEXACO E & P INC.  
Field: Unknown  
Site: Lea County, NM  
Well: Cotton Draw #88  
Wellpath: VH - Job #32K0900383

Date: 11/8/2000 Time: 12:53:32 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<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | N/S<br>ft | E/W<br>ft | VS<br>ft | DLS<br>d/100ft | ClsA<br>deg | ClsD<br>ft |
|----------|-------------|-------------|-----------|-----------|-----------|----------|----------------|-------------|------------|
| 4800.0   | 1.51        | 123.30      | 4798.7    | 4.9       | 97.0      | 4.9      | 0.13           | 87.08       | 97.1       |
| 4900.0   | 1.38        | 126.06      | 4898.6    | 3.5       | 99.0      | 3.5      | 0.15           | 87.97       | 99.1       |
| 5000.0   | 1.24        | 118.98      | 4998.6    | 2.3       | 101.0     | 2.3      | 0.21           | 88.71       | 101.0      |
| 5100.0   | 1.34        | 120.09      | 5098.6    | 1.2       | 102.9     | 1.2      | 0.10           | 89.35       | 102.9      |
| 5200.0   | 1.26        | 117.06      | 5198.6    | 0.1       | 104.9     | 0.1      | 0.11           | 89.96       | 104.9      |
| 5300.0   | 1.18        | 125.16      | 5298.5    | -1.0      | 106.7     | -1.0     | 0.19           | 90.54       | 106.7      |
| 5400.0   | 1.01        | 118.00      | 5398.5    | -2.0      | 108.4     | -2.0     | 0.22           | 91.07       | 108.4      |
| 5500.0   | 1.13        | 118.74      | 5498.5    | -2.9      | 110.0     | -2.9     | 0.12           | 91.51       | 110.0      |
| 5600.0   | 1.09        | 116.47      | 5598.5    | -3.8      | 111.7     | -3.8     | 0.06           | 91.95       | 111.8      |
| 5700.0   | 1.03        | 114.99      | 5698.5    | -4.6      | 113.4     | -4.6     | 0.07           | 92.33       | 113.5      |
| 5800.0   | 0.99        | 119.72      | 5798.5    | -5.4      | 114.9     | -5.4     | 0.09           | 92.70       | 115.1      |
| 5900.0   | 1.01        | 110.59      | 5898.4    | -6.2      | 116.5     | -6.2     | 0.16           | 93.02       | 116.7      |
| 6000.0   | 0.95        | 113.99      | 5998.4    | -6.8      | 118.1     | -6.8     | 0.08           | 93.30       | 118.3      |
| 6100.0   | 0.93        | 121.41      | 6098.4    | -7.6      | 119.5     | -7.6     | 0.12           | 93.62       | 119.8      |
| 6200.0   | 0.91        | 125.74      | 6198.4    | -8.5      | 120.9     | -8.5     | 0.07           | 94.00       | 121.2      |
| 6300.0   | 0.93        | 126.54      | 6298.4    | -9.4      | 122.2     | -9.4     | 0.02           | 94.40       | 122.5      |
| 6400.0   | 0.95        | 141.46      | 6398.4    | -10.5     | 123.4     | -10.5    | 0.24           | 94.88       | 123.8      |
| 6500.0   | 0.96        | 129.84      | 6498.4    | -11.7     | 124.5     | -11.7    | 0.19           | 95.37       | 125.1      |
| 6600.0   | 1.02        | 151.01      | 6598.4    | -13.0     | 125.6     | -13.0    | 0.37           | 95.92       | 126.3      |
| 6700.0   | 1.05        | 147.99      | 6698.3    | -14.6     | 126.5     | -14.6    | 0.06           | 96.58       | 127.3      |
| 6800.0   | 1.19        | 155.90      | 6798.3    | -16.3     | 127.4     | -16.3    | 0.21           | 97.29       | 128.5      |
| 6900.0   | 1.38        | 157.99      | 6898.3    | -18.4     | 128.3     | -18.4    | 0.20           | 98.15       | 129.6      |
| 7000.0   | 1.34        | 162.10      | 6998.3    | -20.6     | 129.1     | -20.6    | 0.11           | 99.07       | 130.7      |
| 7100.0   | 1.44        | 161.02      | 7098.2    | -22.9     | 129.9     | -22.9    | 0.10           | 100.00      | 131.9      |
| 7200.0   | 1.43        | 164.06      | 7198.2    | -25.3     | 130.6     | -25.3    | 0.08           | 100.96      | 133.0      |
| 7300.0   | 1.42        | 159.72      | 7298.2    | -27.7     | 131.4     | -27.7    | 0.11           | 101.89      | 134.3      |
| 7400.0   | 1.44        | 165.69      | 7398.1    | -30.0     | 132.1     | -30.0    | 0.15           | 102.81      | 135.5      |
| 7500.0   | 1.39        | 164.23      | 7498.1    | -32.4     | 132.8     | -32.4    | 0.06           | 103.72      | 136.7      |
| 7600.0   | 1.38        | 164.25      | 7598.1    | -34.7     | 133.4     | -34.7    | 0.01           | 104.60      | 137.9      |
| 7700.0   | 1.46        | 161.18      | 7698.0    | -37.1     | 134.2     | -37.1    | 0.11           | 105.46      | 139.2      |
| 7800.0   | 1.52        | 161.64      | 7798.0    | -39.6     | 135.0     | -39.6    | 0.06           | 106.34      | 140.7      |
| 7900.0   | 1.51        | 164.28      | 7898.0    | -42.1     | 135.8     | -42.1    | 0.07           | 107.23      | 142.1      |
| 8000.0   | 1.57        | 164.00      | 7997.9    | -44.7     | 136.5     | -44.7    | 0.06           | 108.13      | 143.6      |
| 8100.0   | 1.60        | 162.26      | 8097.9    | -47.3     | 137.3     | -47.3    | 0.06           | 109.02      | 145.2      |
| 8200.0   | 1.61        | 163.33      | 8197.9    | -50.0     | 138.1     | -50.0    | 0.03           | 109.90      | 146.9      |
| 8300.0   | 1.57        | 162.38      | 8297.8    | -52.7     | 139.0     | -52.7    | 0.05           | 110.76      | 148.6      |
| 8400.0   | 1.14        | 154.35      | 8397.8    | -54.9     | 139.8     | -54.9    | 0.47           | 111.43      | 150.2      |
| 8500.0   | 0.92        | 168.29      | 8497.8    | -56.5     | 140.4     | -56.5    | 0.33           | 111.94      | 151.3      |
| 8600.0   | 0.69        | 187.00      | 8597.8    | -57.9     | 140.5     | -57.9    | 0.35           | 112.41      | 152.0      |
| 8700.0   | 0.52        | 219.32      | 8697.8    | -58.9     | 140.1     | -58.9    | 0.37           | 112.79      | 152.0      |
| 8800.0   | 0.73        | 224.41      | 8797.8    | -59.7     | 139.4     | -59.7    | 0.22           | 113.18      | 151.6      |
| 8900.0   | 1.06        | 241.01      | 8897.8    | -60.6     | 138.1     | -60.6    | 0.42           | 113.68      | 150.8      |
| 9000.0   | 1.42        | 257.28      | 8997.7    | -61.3     | 136.1     | -61.3    | 0.50           | 114.25      | 149.3      |
| 9100.0   | 1.67        | 249.71      | 9097.7    | -62.1     | 133.5     | -62.1    | 0.32           | 114.94      | 147.3      |
| 9200.0   | 1.94        | 237.14      | 9197.6    | -63.5     | 130.7     | -63.5    | 0.48           | 115.91      | 145.4      |
| 9300.0   | 1.99        | 240.04      | 9297.6    | -65.3     | 127.8     | -65.3    | 0.11           | 117.06      | 143.5      |
| 9400.0   | 1.99        | 236.20      | 9397.5    | -67.1     | 124.9     | -67.1    | 0.13           | 118.26      | 141.8      |
| 9500.0   | 2.02        | 239.99      | 9497.5    | -69.0     | 121.9     | -69.0    | 0.14           | 119.50      | 140.1      |
| 9600.0   | 2.07        | 239.46      | 9597.4    | -70.8     | 118.8     | -70.8    | 0.05           | 120.78      | 138.3      |
| 9700.0   | 2.29        | 237.69      | 9697.3    | -72.8     | 115.6     | -72.8    | 0.23           | 122.19      | 136.6      |
| 9800.0   | 2.00        | 238.87      | 9797.3    | -74.7     | 112.4     | -74.7    | 0.29           | 123.62      | 135.0      |
| 9900.0   | 1.82        | 238.41      | 9897.2    | -76.5     | 109.6     | -76.5    | 0.18           | 124.91      | 133.6      |



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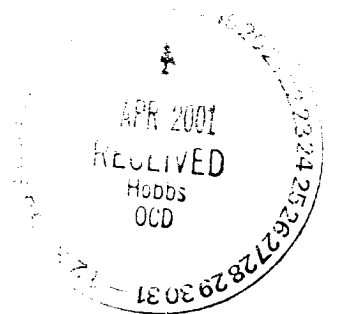
# SCIENTIFIC DRILLING SURVEY REPORT

Company: TEXACO E & P INC.  
Field: Unknown  
Site: Lea County, NM  
Well: Cotton Draw #88  
Wellpath: VH - Job #32K0900383

Date: 11/8/2000 Time: 12:53:32 Page: 3  
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<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | N/S<br>ft | E/W<br>ft | VS<br>ft | DLS<br>d/100ft | ClsA<br>deg | ClsD<br>ft |
|----------|-------------|-------------|-----------|-----------|-----------|----------|----------------|-------------|------------|
| 10000.0  | 1.79        | 235.17      | 9997.1    | -78.2     | 106.9     | -78.2    | 0.11           | 126.18      | 132.5      |
| 10100.0  | 1.89        | 242.76      | 10097.1   | -79.8     | 104.2     | -79.8    | 0.26           | 127.47      | 131.2      |
| 10200.0  | 1.96        | 240.64      | 10197.0   | -81.4     | 101.2     | -81.4    | 0.10           | 128.82      | 129.9      |
| 10300.0  | 2.74        | 241.23      | 10297.0   | -83.4     | 97.6      | -83.4    | 0.78           | 130.51      | 128.4      |
| 10400.0  | 2.96        | 253.73      | 10396.8   | -85.3     | 93.1      | -85.3    | 0.66           | 132.51      | 126.2      |
| 10500.0  | 2.67        | 249.95      | 10496.7   | -86.8     | 88.4      | -86.8    | 0.34           | 134.48      | 123.9      |
| 10600.0  | 1.41        | 243.04      | 10596.6   | -88.2     | 85.1      | -88.2    | 1.28           | 136.01      | 122.5      |
| 10700.0  | 1.45        | 182.20      | 10696.6   | -90.0     | 84.0      | -90.0    | 1.45           | 136.99      | 123.1      |
| 10800.0  | 2.36        | 172.66      | 10796.6   | -93.3     | 84.2      | -93.3    | 0.96           | 137.94      | 125.7      |
| 10900.0  | 3.10        | 186.23      | 10896.5   | -98.0     | 84.1      | -98.0    | 0.98           | 139.36      | 129.2      |
| 11000.0  | 3.87        | 192.42      | 10996.3   | -104.0    | 83.1      | -104.0   | 0.86           | 141.37      | 133.1      |
| 11100.0  | 3.64        | 193.96      | 11096.1   | -110.4    | 81.6      | -110.4   | 0.25           | 143.52      | 137.3      |
| 11200.0  | 3.78        | 192.56      | 11195.8   | -116.7    | 80.1      | -116.7   | 0.17           | 145.52      | 141.6      |
| 11300.0  | 3.89        | 190.95      | 11295.6   | -123.2    | 78.8      | -123.2   | 0.15           | 147.41      | 146.3      |
| 11400.0  | 3.66        | 190.27      | 11395.4   | -129.7    | 77.6      | -129.7   | 0.23           | 149.12      | 151.1      |
| 11500.0  | 3.43        | 190.15      | 11495.2   | -135.8    | 76.5      | -135.8   | 0.23           | 150.61      | 155.8      |
| 11600.0  | 3.16        | 192.45      | 11595.0   | -141.4    | 75.4      | -141.4   | 0.30           | 151.95      | 160.2      |
| 11700.0  | 2.87        | 191.82      | 11694.9   | -146.6    | 74.2      | -146.6   | 0.29           | 153.13      | 164.3      |
| 11800.0  | 2.78        | 194.66      | 11794.8   | -151.4    | 73.1      | -151.4   | 0.17           | 154.22      | 168.1      |
| 11900.0  | 2.18        | 206.18      | 11894.7   | -155.4    | 71.7      | -155.4   | 0.78           | 155.24      | 171.1      |
| 12000.0  | 1.95        | 219.62      | 11994.6   | -158.4    | 69.7      | -158.4   | 0.53           | 156.24      | 173.1      |
| 12100.0  | 1.72        | 224.23      | 12094.6   | -160.8    | 67.6      | -160.8   | 0.27           | 157.20      | 174.5      |
| 12200.0  | 1.86        | 237.45      | 12194.5   | -162.8    | 65.2      | -162.8   | 0.43           | 158.17      | 175.3      |
| 12300.0  | 1.57        | 241.27      | 12294.5   | -164.3    | 62.6      | -164.3   | 0.31           | 159.13      | 175.8      |
| 12400.0  | 1.00        | 222.57      | 12394.5   | -165.6    | 60.8      | -165.6   | 0.70           | 159.83      | 176.4      |
| 12500.0  | 1.01        | 210.48      | 12494.4   | -167.0    | 59.8      | -167.0   | 0.21           | 160.30      | 177.4      |
| 12600.0  | 1.27        | 183.30      | 12594.4   | -168.9    | 59.3      | -168.9   | 0.59           | 160.65      | 179.0      |
| 12700.0  | 1.56        | 173.89      | 12694.4   | -171.3    | 59.4      | -171.3   | 0.37           | 160.89      | 181.3      |
| 12800.0  | 1.56        | 166.13      | 12794.4   | -174.0    | 59.8      | -174.0   | 0.21           | 161.02      | 184.0      |
| 12900.0  | 2.11        | 174.75      | 12894.3   | -177.2    | 60.3      | -177.2   | 0.61           | 161.19      | 187.2      |
| 13000.0  | 1.51        | 177.74      | 12994.3   | -180.3    | 60.6      | -180.3   | 0.61           | 161.44      | 190.2      |
| 13050.0  | 1.72        | 174.31      | 13044.2   | -181.7    | 60.7      | -181.7   | 0.46           | 161.54      | 191.6      |



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TEXACO E & P INC.

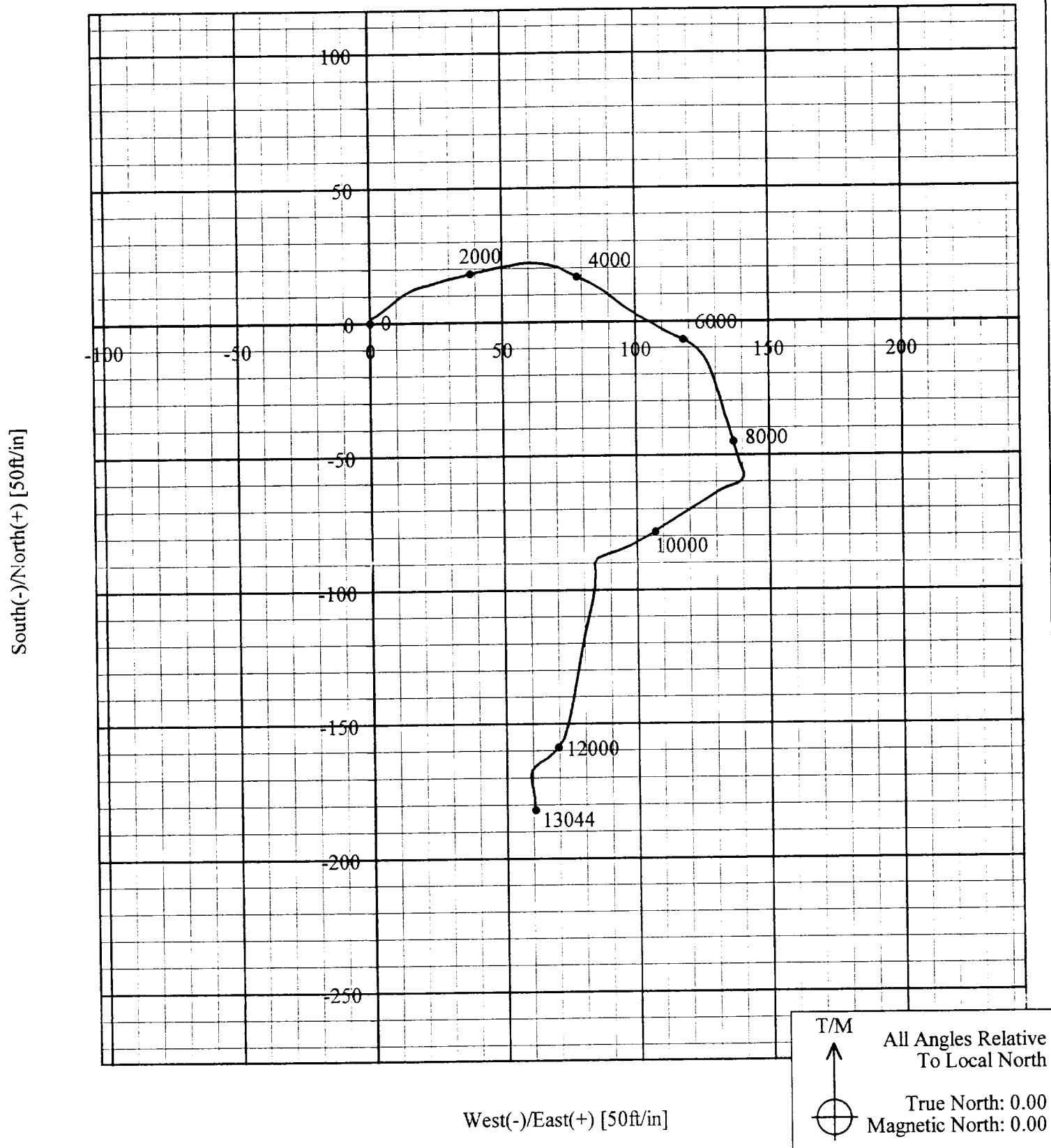
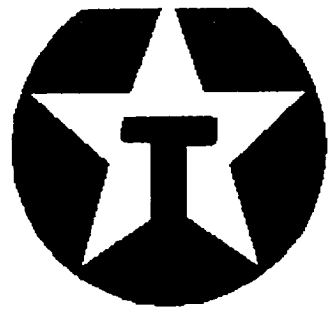
Field: Unknown

Site: Lea County, NM

Well: Cotton Draw #88

Wellpath: VH - Job #32K0900383

Survey: 6/21/00





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ROSENTHAL, N.M.