

# SCIENTIFIC DRILLING SURVEY REPORT

Company: TEXACO E & P INC.  
Field: Vacuum Glorieta West  
Site: Lea County, NM  
Well: VGWU #59  
Wellpath: VHHH - Job #32K0699122/12

Date: 3/23/2000 Time: 14:48:19 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,60.0Azi)  
Survey Calculation Method: Minimum Curvature

Survey: 6/9/99-6/18/99  
KSRG 0'-5800'/MWD 5859'-7262'

Start Date: 6/21/1999

Company: SDI/Ryan  
Tool: KEEPER

Engineer: DeSpain/Bergeron

## 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    | 0.17        | 176.18      | 100.0     | -0.1      | 0.0       | -0.1     | 0.17           | 176.18      | 0.1        |
| 200.0    | 0.18        | 177.53      | 200.0     | -0.5      | 0.0       | -0.2     | 0.01           | 176.65      | 0.5        |
| 300.0    | 0.23        | 255.59      | 300.0     | -0.7      | -0.2      | -0.5     | 0.26           | 193.72      | 0.7        |
| 400.0    | 0.30        | 255.20      | 400.0     | -0.8      | -0.6      | -0.9     | 0.07           | 218.08      | 1.0        |
| 500.0    | 0.30        | 245.47      | 500.0     | -1.0      | -1.1      | -1.4     | 0.05           | 229.11      | 1.5        |
| 600.0    | 0.42        | 241.53      | 600.0     | -1.2      | -1.7      | -2.1     | 0.12           | 233.34      | 2.1        |
| 700.0    | 1.08        | 243.78      | 700.0     | -1.8      | -2.8      | -3.4     | 0.66           | 237.14      | 3.4        |
| 800.0    | 1.72        | 251.51      | 800.0     | -2.7      | -5.1      | -5.8     | 0.67           | 241.92      | 5.8        |
| 900.0    | 2.55        | 259.05      | 899.9     | -3.6      | -8.7      | -9.3     | 0.87           | 247.43      | 9.4        |
| 1000.0   | 2.84        | 263.02      | 999.8     | -4.3      | -13.3     | -13.7    | 0.34           | 251.98      | 14.0       |
| 1100.0   | 2.84        | 267.93      | 1099.7    | -4.7      | -18.3     | -18.2    | 0.24           | 255.49      | 18.9       |
| 1200.0   | 2.61        | 269.63      | 1199.5    | -4.8      | -23.0     | -22.4    | 0.24           | 258.14      | 23.5       |
| 1300.0   | 2.07        | 272.51      | 1299.5    | -4.8      | -27.1     | -25.9    | 0.55           | 260.02      | 27.5       |
| 1400.0   | 1.63        | 284.72      | 1399.4    | -4.3      | -30.3     | -28.4    | 0.59           | 261.86      | 30.6       |
| 1500.0   | 1.54        | 294.51      | 1499.4    | -3.4      | -32.9     | -30.2    | 0.28           | 264.08      | 33.1       |
| 1600.0   | 1.23        | 310.87      | 1599.3    | -2.2      | -34.9     | -31.3    | 0.50           | 266.47      | 35.0       |
| 1700.0   | 1.10        | 307.81      | 1699.3    | -0.9      | -36.5     | -32.0    | 0.14           | 268.65      | 36.5       |
| 1800.0   | 1.12        | 310.05      | 1799.3    | 0.4       | -38.0     | -32.7    | 0.05           | 270.54      | 38.0       |
| 1900.0   | 0.96        | 317.41      | 1899.3    | 1.6       | -39.3     | -33.2    | 0.21           | 272.33      | 39.4       |
| 2000.0   | 0.79        | 333.25      | 1999.3    | 2.8       | -40.2     | -33.4    | 0.29           | 274.03      | 40.3       |
| 2100.0   | 0.43        | 351.40      | 2099.3    | 3.8       | -40.6     | -33.2    | 0.40           | 275.38      | 40.7       |
| 2200.0   | 0.33        | 11.82       | 2199.3    | 4.5       | -40.6     | -32.9    | 0.17           | 276.29      | 40.8       |
| 2300.0   | 0.26        | 20.75       | 2299.3    | 5.0       | -40.4     | -32.5    | 0.08           | 277.01      | 40.7       |
| 2400.0   | 0.36        | 24.20       | 2399.3    | 5.5       | -40.2     | -32.1    | 0.10           | 277.74      | 40.6       |
| 2500.0   | 0.68        | 38.67       | 2499.3    | 6.2       | -39.7     | -31.3    | 0.34           | 278.90      | 40.2       |
| 2600.0   | 0.93        | 48.43       | 2599.2    | 7.2       | -38.7     | -29.9    | 0.28           | 280.56      | 39.4       |
| 2700.0   | 1.08        | 53.16       | 2699.2    | 8.3       | -37.4     | -28.2    | 0.17           | 282.55      | 38.3       |
| 2800.0   | 1.37        | 65.20       | 2799.2    | 9.4       | -35.5     | -26.1    | 0.39           | 284.80      | 36.8       |
| 2900.0   | 1.26        | 80.93       | 2899.2    | 10.1      | -33.4     | -23.9    | 0.38           | 286.78      | 34.8       |
| 3000.0   | 1.18        | 89.10       | 2999.2    | 10.3      | -31.2     | -21.9    | 0.19           | 288.16      | 32.9       |
| 3100.0   | 1.20        | 93.92       | 3099.1    | 10.2      | -29.2     | -20.2    | 0.10           | 289.27      | 30.9       |
| 3200.0   | 1.28        | 98.71       | 3199.1    | 10.0      | -27.0     | -18.4    | 0.13           | 290.22      | 28.8       |
| 3300.0   | 1.20        | 102.72      | 3299.1    | 9.6       | -24.9     | -16.8    | 0.12           | 291.00      | 26.7       |
| 3400.0   | 1.08        | 113.59      | 3399.1    | 8.9       | -23.0     | -15.4    | 0.25           | 291.25      | 24.7       |
| 3500.0   | 1.05        | 125.70      | 3499.1    | 8.0       | -21.4     | -14.5    | 0.23           | 290.58      | 22.9       |
| 3600.0   | 1.11        | 136.04      | 3599.0    | 6.8       | -20.0     | -13.9    | 0.20           | 288.80      | 21.1       |
| 3700.0   | 1.23        | 138.97      | 3699.0    | 5.3       | -18.6     | -13.5    | 0.13           | 285.89      | 19.4       |
| 3800.0   | 1.39        | 142.48      | 3799.0    | 3.5       | -17.2     | -13.1    | 0.18           | 281.61      | 17.5       |
| 3900.0   | 1.56        | 147.46      | 3899.0    | 1.4       | -15.7     | -12.9    | 0.21           | 275.16      | 15.8       |
| 4000.0   | 1.61        | 153.70      | 3998.9    | -1.0      | -14.3     | -12.9    | 0.18           | 266.05      | 14.4       |
| 4100.0   | 1.75        | 157.39      | 4098.9    | -3.7      | -13.1     | -13.2    | 0.18           | 254.43      | 13.6       |
| 4200.0   | 1.88        | 161.79      | 4198.8    | -6.6      | -12.0     | -13.7    | 0.19           | 241.16      | 13.7       |
| 4300.0   | 1.91        | 157.26      | 4298.8    | -9.7      | -10.9     | -14.3    | 0.15           | 228.21      | 14.6       |
| 4400.0   | 1.97        | 153.16      | 4398.7    | -12.8     | -9.5      | -14.6    | 0.15           | 216.48      | 15.9       |
| 4500.0   | 1.65        | 144.00      | 4498.7    | -15.5     | -7.8      | -14.5    | 0.43           | 206.83      | 17.4       |
| 4600.0   | 1.54        | 145.97      | 4598.6    | -17.8     | -6.2      | -14.3    | 0.12           | 199.34      | 18.8       |
| 4700.0   | 1.60        | 144.77      | 4698.6    | -20.0     | -4.7      | -14.1    | 0.07           | 193.16      | 20.6       |