

## LONG's METHOD OF SURVEY COMPUTATION

### OBLIQUE CIRCULAR ARC INTERPOLATION

|      |                                    |
|------|------------------------------------|
| 6000 | MD OF INTERPOLATION DEPTH,(feet)   |
| #N/A | TVD COORDINATE OF THE DEPTH (feet) |
| #N/A | N/S COORDINATE OF DEPTH (feet)     |
| #N/A | E/W COORDINATE OF DEPTH (feet)     |

3 D DISTANCE BETWEEN STATION A AND STATION B

### DISTANCE TABLE

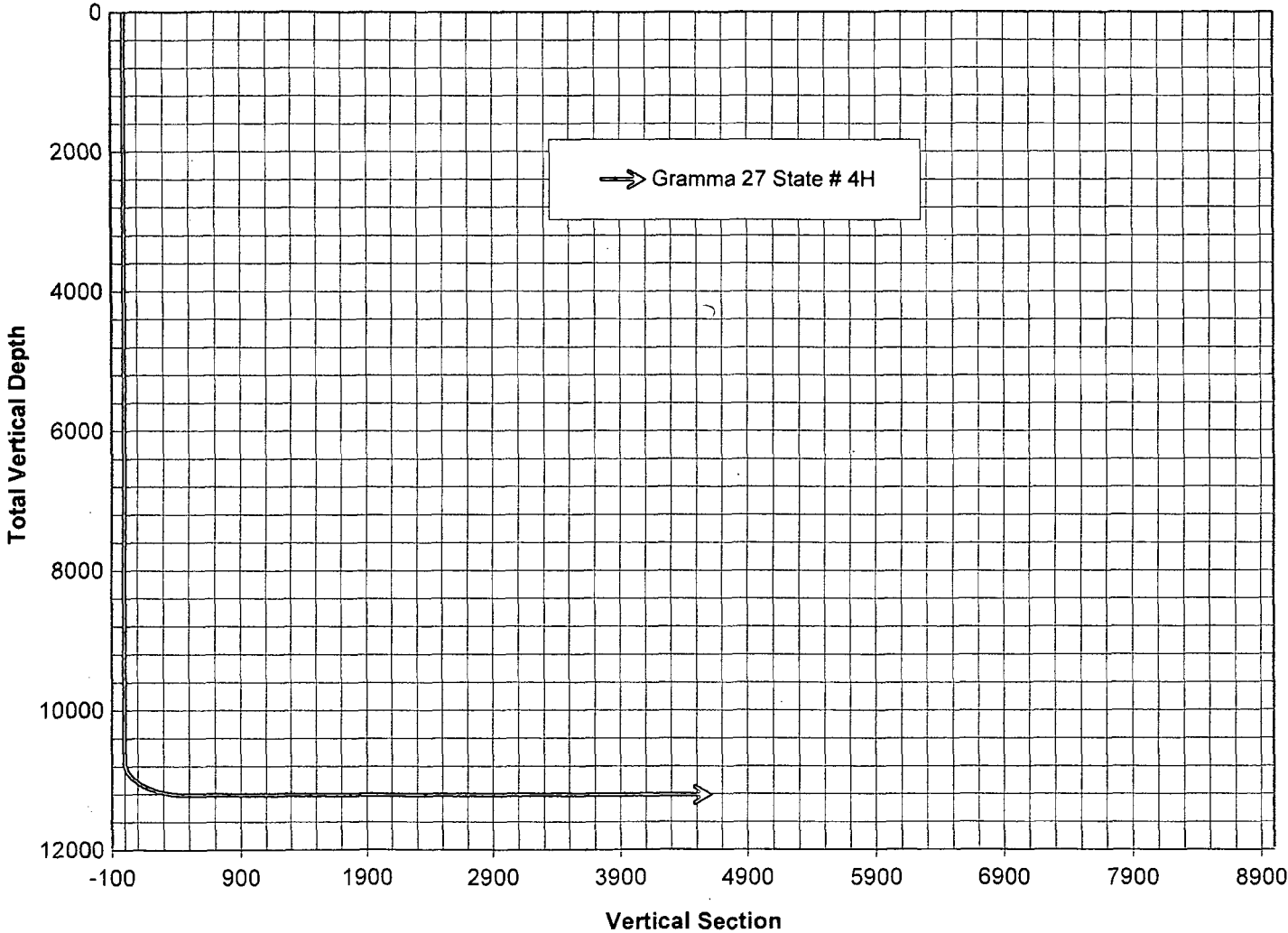
| STATION A | STATION B |
|-----------|-----------|
| 400.00    | 600.00    |
| 300.00    | 400.00    |
| 100.00    | 300.00    |
| 300.00    | ft        |

### TABLE OF SURVEY STATIONS

Calculator =

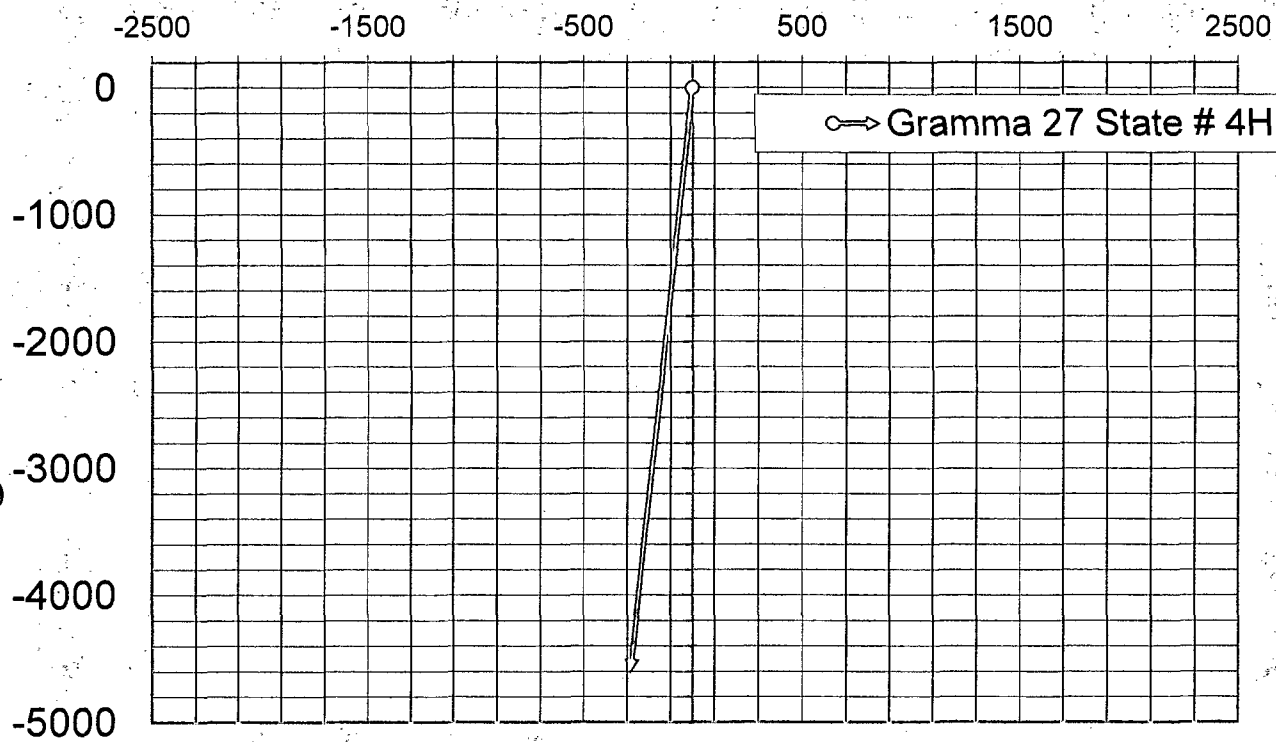
| STA # | ΔMD ft       | INCL deg | AZIM deg | MD ft    | TVD ft   | N+S-ft   | E+W-ft  | DLS deg/100FT |
|-------|--------------|----------|----------|----------|----------|----------|---------|---------------|
| 1     | TIE POINT => | 0        | 0        | 10737.00 | 10737.00 | 0.00     | 0.00    | -             |
| 2     | 100          | 12       | 183.5169 | 10837.00 | 10836.27 | -10.41   | -0.64   | 12.00         |
| 3     | 100          | 24       | 183.5169 | 10937.00 | 10931.20 | -41.20   | -2.53   | 12.00         |
| 4     | 100          | 36       | 183.5169 | 11037.00 | 11017.65 | -91.02   | -5.59   | 12.00         |
| 5     | 100          | 48       | 183.5169 | 11137.00 | 11091.83 | -157.68  | -9.69   | 12.00         |
| 6     | 100          | 60       | 183.5169 | 11237.00 | 11150.50 | -238.28  | -14.64  | 12.00         |
| 7     | 100          | 72       | 183.5169 | 11337.00 | 11191.10 | -329.30  | -20.24  | 12.00         |
| 8     | 100          | 84       | 183.5169 | 11437.00 | 11211.85 | -426.75  | -26.23  | 12.00         |
| 9     | 50           | 90       | 183.5169 | 11487.00 | 11214.46 | -476.57  | -29.29  | 12.00         |
| 10    | 100          | 90       | 183.5169 | 11587.00 | 11214.46 | -576.38  | -35.42  | 0.00          |
| 11    | 100          | 90       | 183.5169 | 11687.00 | 11214.46 | -676.19  | -41.56  | 0.00          |
| 12    | 100          | 90       | 183.5169 | 11787.00 | 11214.46 | -776.00  | -47.69  | 0.00          |
| 13    | 100          | 90       | 183.5169 | 11887.00 | 11214.46 | -875.81  | -53.83  | 0.00          |
| 14    | 100          | 90       | 183.5169 | 11987.00 | 11214.46 | -975.62  | -59.96  | 0.00          |
| 15    | 100          | 90       | 183.5169 | 12087.00 | 11214.46 | -1075.44 | -66.09  | 0.00          |
| 16    | 100          | 90       | 183.5169 | 12187.00 | 11214.46 | -1175.25 | -72.23  | 0.00          |
| 17    | 100          | 90       | 183.5169 | 12287.00 | 11214.46 | -1275.06 | -78.36  | 0.00          |
| 18    | 100          | 90       | 183.5169 | 12387.00 | 11214.46 | -1374.87 | -84.50  | 0.00          |
| 19    | 100          | 90       | 183.5169 | 12487.00 | 11214.46 | -1474.68 | -90.63  | 0.00          |
| 20    | 100          | 90       | 183.5169 | 12587.00 | 11214.46 | -1574.49 | -96.77  | 0.00          |
| 21    | 100          | 90       | 183.5169 | 12687.00 | 11214.46 | -1674.31 | -102.90 | 0.00          |
| 22    | 100          | 90       | 183.5169 | 12787.00 | 11214.46 | -1774.12 | -109.03 | 0.00          |
| 23    | 100          | 90       | 183.5169 | 12887.00 | 11214.46 | -1873.93 | -115.17 | 0.00          |
| 24    | 100          | 90       | 183.5169 | 12987.00 | 11214.46 | -1973.74 | -121.30 | 0.00          |
| 25    | 100          | 90       | 183.5169 | 13087.00 | 11214.46 | -2073.55 | -127.44 | 0.00          |
| 26    | 100          | 90       | 183.5169 | 13187.00 | 11214.46 | -2173.36 | -133.57 | 0.00          |
| 27    | 100          | 90       | 183.5169 | 13287.00 | 11214.46 | -2273.18 | -139.71 | 0.00          |
| 28    | 100          | 90       | 183.5169 | 13387.00 | 11214.46 | -2372.99 | -145.84 | 0.00          |
| 29    | 100          | 90       | 183.5169 | 13487.00 | 11214.46 | -2472.80 | -151.97 | 0.00          |
| 30    | 100          | 90       | 183.5169 | 13587.00 | 11214.46 | -2572.61 | -158.11 | 0.00          |
| 31    | 100          | 90       | 183.5169 | 13687.00 | 11214.46 | -2672.42 | -164.24 | 0.00          |
| 32    | 100          | 90       | 183.5169 | 13787.00 | 11214.46 | -2772.23 | -170.38 | 0.00          |
| 33    | 100          | 90       | 183.5169 | 13887.00 | 11214.46 | -2872.05 | -176.51 | 0.00          |
| 34    | 100          | 90       | 183.5169 | 13987.00 | 11214.46 | -2971.86 | -182.65 | 0.00          |
| 35    | 100          | 90       | 183.5169 | 14087.00 | 11214.46 | -3071.67 | -188.78 | 0.00          |
| 36    | 100          | 90       | 183.5169 | 14187.00 | 11214.46 | -3171.48 | -194.92 | 0.00          |
| 37    | 100          | 90       | 183.5169 | 14287.00 | 11214.46 | -3271.29 | -201.05 | 0.00          |
| 38    | 100          | 90       | 183.5169 | 14387.00 | 11214.46 | -3371.10 | -207.18 | 0.00          |
| 39    | 100          | 90       | 183.5169 | 14487.00 | 11214.46 | -3470.92 | -213.32 | 0.00          |
| 40    | 100          | 90       | 183.5169 | 14587.00 | 11214.46 | -3570.73 | -219.45 | 0.00          |
| 41    | 100          | 90       | 183.5169 | 14687.00 | 11214.46 | -3670.54 | -225.59 | 0.00          |
| 42    | 100          | 90       | 183.5169 | 14787.00 | 11214.46 | -3770.35 | -231.72 | 0.00          |
| 43    | 100          | 90       | 183.5169 | 14887.00 | 11214.46 | -3870.16 | -237.86 | 0.00          |
| 44    | 100          | 90       | 183.5169 | 14987.00 | 11214.46 | -3969.97 | -243.99 | 0.00          |
| 45    | 100          | 90       | 183.5169 | 15087.00 | 11214.46 | -4069.79 | -250.12 | 0.00          |
| 46    | 100          | 90       | 183.5169 | 15187.00 | 11214.46 | -4169.60 | -256.26 | 0.00          |
| 47    | 100          | 90       | 183.5169 | 15287.00 | 11214.46 | -4269.41 | -262.39 | 0.00          |
| 48    | 100          | 90       | 183.5169 | 15387.00 | 11214.46 | -4369.22 | -268.53 | 0.00          |
| 49    | 100          | 90       | 183.5169 | 15487.00 | 11214.46 | -4469.03 | -274.66 | 0.00          |
| 50    | 100          | 90       | 183.5169 | 15587.00 | 11214.46 | -4568.84 | -280.80 | 0.00          |
| 51    | 52           | 90       | 183.5169 | 15639.00 | 11214.46 | -4620.75 | -283.99 | 0.00          |

Gamma 27 State #4H



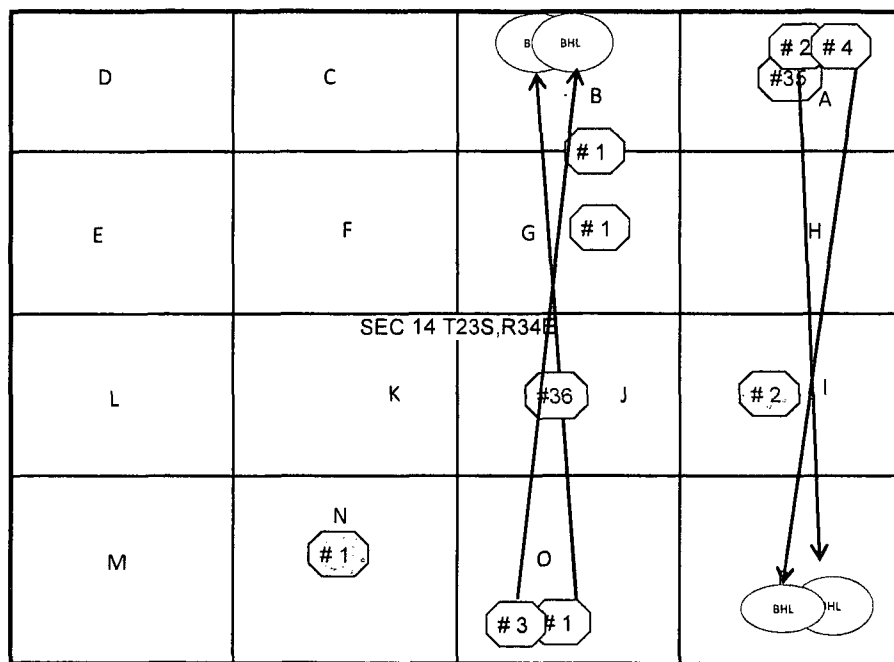
# Horizontal Plane Footage +East/-West

Footage + North/- South



# Gramma 27 State # 4H \_ Bone Springs Horizontal

Sec 27, T-21-S, R-34-E, Lea County, New Mexico



| Well Name          | Surface Location    | Depth and Strata           | Current Prod Zone | Bottom Hole Location |                           |
|--------------------|---------------------|----------------------------|-------------------|----------------------|---------------------------|
| Gramma 27 St #4H   | 330 FNL & 330 FEL   | TD = 15,630 3rd Bone Sprgs | Not Drilled       | 330 FSL & 660 FEL    | Caza Operating, LLC       |
| Gramma 27 St #3H   | 330 FSL & 2310 FEL  | TD = 14,650 2nd Bone Sprgs | Not Drilled       | 330 FNL & 1980 FEL   | Caza Operating, LLC       |
| Gramma 27 St #2H   | 330 FNL & 500 FEL   | TD = 14,650 2nd Bone Sprgs | TVD-10,300 ft     | 349 FSL & 346 FEL    | Caza -Drilled & Producing |
| Gramma 27 St #1H   | 330 FSL & 660 FEL   | TD = 15496 3rd Bone Sprgs  | TVD-11,200 ft     | 350 FNL & 2290 FEL   | Caza -Drilled & Producing |
| Wilson B 9611 # 35 | 660 FNL & 660 FEL   | TD = 4,100 Yates           | D&A               | 660 FNL & FEL        | Wilson Oil Co.            |
| Wilson B 9611 # 36 | 1980 FSL & 1980 FEL | TD = 3676 Yates            | D&A               | 1980 FSL & 1980 FEL  | Wilson Oil Co.            |
| GRW # 1            | 1980 FNL & 1650 FEL | TD = 13,405 Morrow         | D&A               | 1980 FNL & 1650 FEL  | Pogo Producing Co.        |