

WORK SHEET FOR STEPWISE CALCULATION

~~XXXXXXXXXXXX~~  
 PRESSURE (P<sub>f</sub> & P<sub>g</sub>)  
 (SURFACE) (P<sub>c</sub> & P<sub>w</sub>)  
 RATE NO. 3  
 Form C-122-E

PAYEE: Monsanto Company LEASE: Cert Federal WELL NO. 2 DATE 10-20-76  
 ACTION: UNIT F SECTION 10 TOWNSHIP 21S RANGE 27E  
 11437 H 11437 L/H 1.00 G 0.596 % CO<sub>2</sub> 0.00 % N<sub>2</sub> 0.00 % H<sub>2</sub>S 0.00  
 d F r Q<sub>m</sub> M<sup>2</sup> cfd (L/H) (F<sub>r</sub> Q<sub>m</sub>)<sup>2</sup> P<sub>cr</sub> 671 T<sub>cr</sub> 358

| ITEM                                             | SOURCE | 1                        | 2       | 3       | 4       | 5       | 6 | 7 | 8 | 9 | 10 |
|--------------------------------------------------|--------|--------------------------|---------|---------|---------|---------|---|---|---|---|----|
| 1 H                                              |        | 11437                    | 5719    | 0       |         |         |   |   |   |   |    |
| 2 GH                                             |        | 6816                     | 3408    | 0       |         |         |   |   |   |   |    |
| 3 37.5GH                                         |        | 255617                   | 127808  | 0       |         |         |   |   |   |   |    |
| P <sub>c</sub> or P <sub>n</sub>                 |        | 2232.7                   | 1970.7  | 2109.5  | 2078.0  |         |   |   |   |   |    |
| P <sub>r</sub>                                   |        | 3.33                     | 2.94    | 3.14    | 3.10    |         |   |   |   |   |    |
| P <sub>w</sub>                                   |        | 624                      | 578     | 531     | 531     |         |   |   |   |   |    |
| P <sub>m</sub>                                   |        | 1.74                     | 1.61    | 1.48    | 1.48    |         |   |   |   |   |    |
| 2                                                |        | 0.873                    | 0.831   | 0.761   | 0.762   |         |   |   |   |   |    |
| P/2 P/2                                          |        | 4 ÷ 8                    | 2558.68 | 2371.72 | 2771.26 | 2727.72 |   |   |   |   |    |
| P/P <sub>w</sub>                                 |        | 9 ÷ 6                    | 4.1004  | 5.2189  | 5.1370  |         |   |   |   |   |    |
| (P/P <sub>w</sub> ) <sup>2</sup> / 1000          |        | (10 <sup>2</sup> / 1000) |         |         |         |         |   |   |   |   |    |
| /H (P <sub>r</sub> Q <sub>m</sub> ) <sup>2</sup> |        |                          |         |         |         |         |   |   |   |   |    |
|                                                  |        | 11 ÷ 12                  |         |         |         |         |   |   |   |   |    |
| P <sub>n</sub>                                   |        | 10 ÷ 13                  | 243.876 | 243.494 | 191.610 | 194.668 |   |   |   |   |    |
| P <sub>n</sub> - P <sub>n-1</sub>                |        |                          | 262     | 262     | 294     | 292     |   |   |   |   |    |
| P <sub>n-1</sub> + P <sub>n-1</sub>              |        |                          | 487.370 | 435.104 | 438.162 |         |   |   |   |   |    |
| M x N                                            |        | 15 x 16                  | 127691  | 128820  |         |         |   |   |   |   |    |
| Σ (M x N)                                        |        | Σ 17                     | 127691  | 256511  |         |         |   |   |   |   |    |

Delta P =  $\frac{3[255617]}{243.370 + 4[191.610] + 194.668} = \frac{766851}{1204.478} = 636.7$   
 P = 2232.7 - 636.7 = 1596.0