

### Troy Grove Back Pressure Curve User Calculations Worksheet

Use this sheet to determine Troy Grove reservoir flow capabilities given reservoir pressure and flowing pressure. Or, use this worksheet to determine the reservoir pressure or flowing pressure required in order for the reservoir to flow a given amount.

Table A below is used to fit a straight line on the BP Curve. The "n" value for Troy is 0.75. The slope of a line on the BP is  $1/n$ , therefore the slope =  $4/3 = 1.3333$ . In order to fit the standard equation of a line on a log-log graph, the y-intercept must be determined. The y-intercept is where the line crosses at  $x=1$ .

**A**

	x	y
1	1	5.76
2	8500	1000000

slope = 1.33333

To change the position of the line on the graph, change  $x_2$  and/or  $y_2$  in the table above. Then, recalculate  $y_1$  using the solve function in the Tools menu. Hold the slope fixed at 1.3333 and solve for  $y_1$ .

To plot descriptive points on the graphs, use Table B below. Change the x and y values as well as the point label. This information will then be presented on the Troy Grove Back Pressure Curve.

**B**

label	x	y

To calculate flowing capacity at Troy Grove given a flowing pressure and a reservoir pressure, use table C. To calculate reservoir pressure required to maintain a user defined flow rate at a user defined flowing pressure, use Table D. To calculate flowing pressure required to maintain a user defined flow rate at a user defined reservoir pressure, use Table E.

**C**

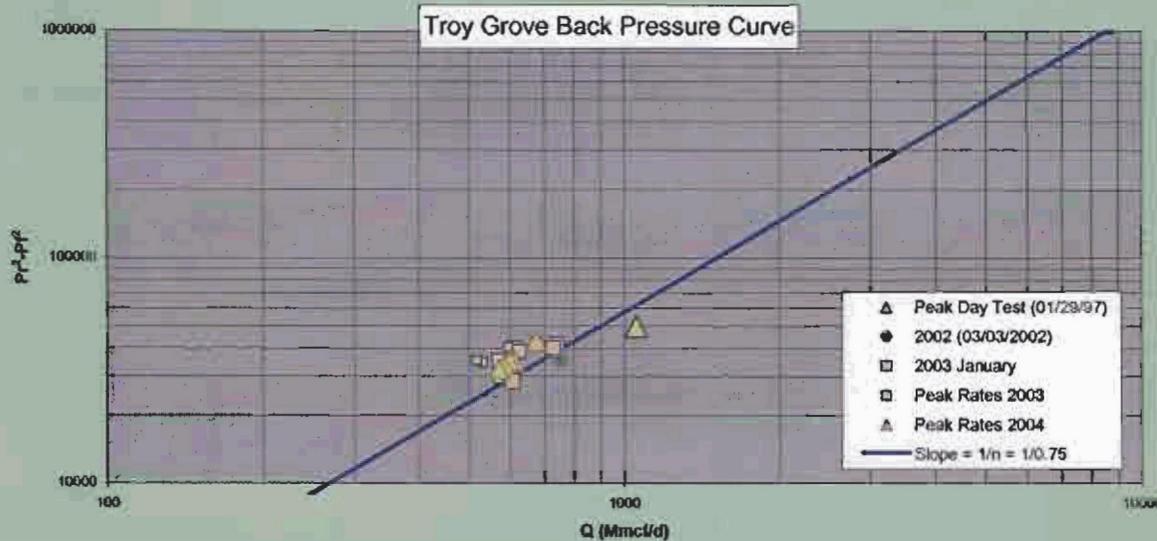
Pf =	425
Pr =	455
$Pr^2 - Pf^2 =$	26400
Q =	557

**D**

Pr =	455
Q =	500
$Pr^2 - Pf^2 =$	22877
Pf =	429

**E**

Pf =	420
Q =	500
$Pr^2 - Pf^2 =$	22877
Pr =	446



### Ancona Back Pressure Curve Worksheet

Use this sheet to determine Ancona reservoir flow capabilities given reservoir pressure and flowing pressure. Or, use this worksheet to determine the reservoir pressure or flowing pressure required in order for the reservoir to flow a given amount.

Table A below is used to plot a straight line on the BP Curve. The "n" value for Ancona is 0.92. The slope of a line on the BP Curve is 1/n, therefore the slope = 25/23 = 1.086956. In order to fit the standard equation of a line on a log-log graph, the y-intercept must be determined. The y-intercept is where the line crosses at x=1.

A

	x	y
1	1	246.91
2	10000	5500000

slope = 1.086957

To change the position of the line on the graph, change  $x_2$  and/or  $y_2$  in the table above. Then, recalculate  $y_1$  using the solve function in the Tools menu. Hold the slope fixed at 1.086956 and solve for  $y_1$ .

To plot descriptive points on the graphs, use Table B below. Change the x and y values as well as the point label. This information will then be presented on the Ancona Back Pressure Curve.

B

label	x	y

To calculate flowing capacity at Ancona given a flowing pressure and a reservoir pressure, use table C. To calculate reservoir pressure required to maintain a user defined flow rate at a user defined flowing pressure, use Table D. To calculate flowing pressure required to maintain a user defined flow rate at a user defined reservoir pressure, use Table E.

C

Pr	775
Pf	890
$Pr^2 - Pf^2$	191475
Q	455

D

Pr	890
Q	500
$Pr^2 - Pf^2$	211933
Pf	762

E

Pr	750
Q	500
$Pr^2 - Pf^2$	211933
Pf	880

