

# HARMON A #2

## MONTHLY GAS PRODUCTION ALLOCATION FORMULA

### GENERAL EQUATION

$$Q_t = Q_{ftc} + Q_{pc}$$

WHERE:  $Q_t$  = TOTAL MONTHLY PRODUCTION (MCF/MONTH)  
 $Q_{ftc}$  = FRUITLAND COAL (ftc) MONTHLY PRODUCTION  
 $Q_{pc}$  = PICTURED CLIFFS (pc) MONTHLY PRODUCTION (MCF/MONTH)

REARRANGING THE EQUATION TO SOLVE FOR  $Q_{ftc}$ :

$$Q_{ftc} = Q_t - Q_{pc}$$

ANY PRODUCTION RATE OVER WHAT IS CALCULATED FOR THE PICTURED CLIFFS (PC) USING THE APPLIED FORMULA IS FRUITLAND COAL (FTC) PRODUCTION.

PICTURED CLIFFS (PC) FORMATION PRODUCTION FORMULA IS:

$$Q_{pc} = Q_{pci} \times e^{\{-(D_{pc}) \times (t)\}}$$

WHERE:  $Q_{pci}$  = INITIAL PC MONTHLY FLOW RATE = 912 MCF/M (DETERMINED FROM TESTED RATE AGAINST 75 PSI LINE PRESSURE AS OPPOSED TO HISTORICAL LINE PRESSURE OF 175 PSI)  
 $D_{pc}$  = PICTURED CLIFFS MONTHLY DECLINE RATE CALCULATED FROM DECLINE CURVE AND MATERIAL BALANCE ANALYSIS:  
 $D_{pc} = (0.0033/M)$

THUS:  $Q_{ftc} = Q_t - Q_{pci} \times e^{\{-(0.0033) \times (t)\}}$

WHERE: (t) IS IN MONTHS

REFERENCE: Thompson, R. S., and Wright, J. D., "Oil Property Evaluation", pages 5-2, 5-3, 5-4.