

C M MORRIS 100

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 (OBTAINED FROM C M MORRIS #1 PRODUCTION HISTORY)

D_{pc} = ~~PICTURED CLIFFS MONTHLY DECLINE RATE CALCULATED FROM:~~

$$D_{pc} = \frac{(Q_{pci} - Q_{pcabd})}{N_{p(pc)}}$$

See Determination of Q_{pci} and PC Estimated Ultimate Recovery ($N_{p(pc)}$)
 $Q_{pci} = 1521$ MCF/M; $Q_{pcabd} = 300$ MCF/M; $N_{p(pc)} = 436.8$ MMCF

WHERE: $N_{p(pc)}$ = PICTURED CLIFFS ESTIMATED ULTIMATE RECOVERY (EUR)
 $N_{p(pc)}$ = DETERMINED FROM MATERIAL BALANCE CALCULATIONS OBTAINED FROM THE C M MORRIS #1 (PC) WELLBORE PREVIOUSLY LOCATED IN THE SAME 1/4 SECTION (REMAINING RESERVES = 436.794 MMCF).

By calculating $N_{p(pc)}$ from SIBHP and determining Q_{pci} , D_{pc} can then be calculated utilizing the previously described parameters. See derivation of D_{pc} , item (c) on page 4.

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

WHERE: (t) IS IN MONTHS

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